The Builder.

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The Revue Générale de l'Architecture.

THE introduction to the second half of the twenty-eighth volume of the *Revue Générale* commences with an explanatory paragraph, bearing melancholy reference to events which had caused the temporary suspension of its publication for more than a year. "At the announcement of our first defeats, the workman's tool was everywhere abandoned for the musket, and the press became but a military echo. Here and there we had pulling down enough, especially by means of cannon shot; but in the matter of construction, we were confined to cutting trenches and raising outworks; and under such conditions, journals such as the *Revue* had no pretext for existence." The twenty-eighth volume, which represented 1870, having thus been abruptly broken into at its fourth section, and not resumed till the middle of 1871, it was decided to complete the volume under the same number, but to regard it as comprising the two years 1870–71. We have before us the remaining numbers of the twenty-eighth, and the commencement of the twenty-ninth volume; and, congratulating our much esteemed contemporary, M. Daly, on the renewed excellence, both as to writing and illustrations, of the journal over which he presides, we propose to say a few words in relation to the contents of the portion before us.

The important place given in France to first principles, the predominance of the *idea*, in fact, is not less exemplified in her leading architectural journal than in her literary periodicals. A considerable portion, for instance, of numbers 5 and 6 of the *Revue* is occupied by description and illustrations of the new church at the small town of Flers, designed by M. Ruprich-Robert. But this description is prefaced by a somewhat elaborate analysis of the conditions, and ideas, and demands upon the artist pre-supposed in the three words, "*bâtir une église*": the main tendency of these remarks being in regard to the due balance of "tradition" and "inspiration," to be preserved in the production of a design for a modern church. Archæology, it is pointed out (the writer is M. Sirodot), with all the knowledge it furnishes as to ancient practice and the art of building, only serves to direct and facilitate the research after novel expressions; but it supplies a part only of the solution, the material element:—

"Pour obtenir l'élément qui complète la solution, qui la rend vivante et distinct de toutes les autres; entraîné par une ardente aspiration vers la vérité, animé par les grands enseignments de la religion, assisté de méditations assidues dirigées vers les célestes horizons, et soutenu par une ferme volonté, c'est à *l'inspiration* qui l'artiste doit la demander."

All which is very true, and very well expressed. "Fine words," however, in our homely English proverb, "butter no parsnips"; neither, we fear, do they design churches. In plain truth, we do not admire the external design of *l'église de Flers*; and we have seen much more picturesque and beautiful churches built on much worse principles. The plan (a kind of transepted modification of the Basilica) seems an exceedingly good one; and the internal effect may probably be good, based as the whole design is on Romanesque forms, which, as most of us know, lend themselves better to an internal than an external architecture. Considerable attention seems to have been paid to the internal decoration and furniture; some of the masonry decoration (carving and diapers) is exceedingly good and well applied; and the pulpit, of wood with an ornamental canopy, a large illustration of which is given, is a very elegant and original design. It may be a melancholy satisfaction to some readers to hear that the architect in France is liable to the criticisms of amateur ecclesiologists, as among ourselves; and that the *Association Normande* at one of their meetings "sat upon" the church, and found divers faults with it, on the ground of want of adherence to precedent. The more pertinent question was also asked, why the architect had put a tower "*franchement Gothique*" upon a façade "*franchement Romane*"; a question which "the architect" has not answered apparently. His defender in the *Revue* gives excellent reasons for the arrangement; but then, if the result is bad, what is the value of the reasoning?

The same number of the *Revue* contains drawings of some of the designs for working-men's houses exhibited and premiated at the Paris Exposition of 1867; these and the descriptions and estimates annexed should be of interest to those engaged in studying this important subject. The plan which seems to have achieved the best results in comparison with the expenditure, is that of Herr Hofman, of Neustadt, whose scheme entirely abolishes wood and iron except for fittings, and employs arched construction in walls and floors, and areas for dryness in the former; the ground floor consists of a small kitchen and large living-room, the latter being warmed from the kitchen fire by a large sheet-iron box or stove, in which the smoke and heated air from the kitchen fire circulate before final dispersion by the chimney. The estimated cost of these habitations is 41 francs per square mètre: some of the others are much beyond this. None of the designers seem to have succeeded in rendering the houses picturesque in appearance. The critique on the architectural works in the *Salon* of 1870, by M. Davioud, has, of course, lost its immediate interest; but some remarks suggested by the "restoration" schemes exhibited on that occasion are so well put and so much to the point that we may be excused for giving them further currency here. Speaking of the proposed restoration of the front of the church of Villeneuve-sur-Yonne, he observes that the architect, M. Rouyer,—

"Has succeeded in producing an *ensemble* by which the archæologist and architect will some day be deceived as to the epoch which had witnessed this restoration. Is it so that one should think of completing the edifices which have preceded our time? We think not. Let us replace with the most scrupulous exactitude every feature destroyed by time, by fire, or by the hand of man; let us complete an *ensemble* by adding that which the history of the monument can give with certitude: nothing better. But to create new parts by circumscribing the creative spirit within a circle comprised by a score of years of art-history, under the pretext of unity of effect, is an error against which we protest. M. Chancel, for example, has been anxious to make a new project for the reconstruction of the façade of the Church of St. Eustache, at Paris, in the perfect style of the first part of the sixteenth century; but if M. Chancel, in place of a study of the Renaissance, had undertaken to find the means to add to that beautiful church a modern façade, where the proportions, the general forms, the principal lines would have been in relation to and in harmony with the corresponding elements of the church of the sixteenth century, we might have seen a very different kind of interest excited than that which results from the study in question. He should be of his own time, and speak with his own tongue, and not endeavour to deceive posterity as to the monuments which we shall transmit to them."

With which sensible remarks of the French critic our readers will scarcely doubt that we concur; unfortunately the advice comes too late, in too many cases. In the continuation of the *Salon* article, in the following number of the *Revue*, amidst various interesting and incisive criticisms, we meet with some comments on a design for a château by our countryman, Mr. White; the same, we suppose, that was exhibited two or three years ago in London. The French critic thinks that in a house of this descirption, with such thickness of walls, such roughness (*apreté*) of details, a style so contemporaneous with Philippe-Auguste, the host of the château must have quitted the modern waistcoat for the coat of mail, and the rifle for the arquebus. All this prolonged imitation of an epoch that is no more wants the first law of beauty:—"L'unité dans l'harmonie. Il importe peu que les fragments matériels d'une habitation soient d'un même goût et conçus dans le même esprit; il faut encore que la muraille, le meuble, l'ustensile, et le vêtement, que disons-nous! la vie, les mœurs, les coutumes, et les pensées de l'habitant soient en harmonie de caractère, de forme, et de sentiment avec le cadre qui les enveloppe." In which also there is matter for consideration for some of our domestic architects.

The number from which the above quotation is made contains also a long letter from an amateur, Dr. Cattois, in relation to the design for the *Monasterie de l'Assomption*, at Bordeaux, designed by M. Aymar Verdier. Dr. Cattois's letter is rather rambling and voluminous, divided between the importance of a modern Christian architecture with a correct "æsthetique," and an onslaught on the ignorance and presumption of the clerical amateurs or non-amateurs. The drawings and details of the building are very good and very interesting, the large parlour chimney-piece, in particular, of which a full-page illustration is given, is a very good piece of interior stonework, of considerable originality of design, solid, and not heavy; and the same may be said of some of the woodwork. A plan and section of the *Selamlik*, or grand reception-chamber for guests in Oriental houses, designed by M. Drevet, as an illustration for the '67 Exposition, is an interesting example of an experiment in Oriental art by a Western architect: the ornamental details, it is stated, were largely adopted from a splendid illuminated copy of the Koran, sent for exhibition at Paris on the same occasion, but which the Egyptian Commission previously availed themselves of for the purpose alluded to. The practical portion of this number includes also drawings of Swedish and Russian timber constructions, and illustrations of railroad *matériel* and mechanism.

The number 9–10 is mainly occupied by a very full report of the funeral of M. Duban (to which we alluded at the time), and of the four addresses delivered on the occasion, the fourth being that of Professor Donaldson, who attended as representing the Institute and the English profession generally; though this latter, says the editor of the *Revue*,—"Ne fut pas, en effet, un discours; c'était mieux; quelques paroles simples et honnêtes, bonnes et fermes, le reflet de sa propre et sympathique individualité. Ces quelques mots produisirent une vive impression." An illustrated paper, "On the Strength of Cast-iron Columns," by M. L. A. Barré, engineer, and a beautifully-executed engraving of a very picturesque house at Boston, U.S. (Messrs. Crace and Van Brunt, architects), are among the contents of this number. The concluding number of vol. xxviii. contains an amusing article from the pen of M. Garnier, "Les Envois de Rome." M. Garnier had been requested to review the designs sent from Rome, and proceeded for that purpose to the École des Beaux-Arts, as he tells us, "with the dignity which belongs to a man about to fulfil a mission. I had already in my hand my notebook and pencil which I thought best to carry openly before

every one, that I might show them I was no ordinary visitor, but a veritable critic, fulfilling a sacred office," &c. When lo! as our critic arrived at the place of operation, his ears were saluted by a hot discussion between divers persons, and the words, "Parthenon," "Villa-Madama," &c., bandied about, indicated that the speakers were anticipating his office. Among them were two particularly prominent in the discussion; "the one of an age that might be called respectable: he had white hair, which indicates experience; the rosette of an official, which indicates an honourable situation; and a crooked nose, which indicates a correct judgment. The other, younger, had a great black beard, indicative of goodwill; a thin frame, indicative of nervous excitability; and round eyes, indicative of a certain amount of presumption." How the pair discussed and contradicted each other about the proposed restorations of the Roman temples; how the critic followed them to make notes of their conversation; how he hid behind a kiosque for the better accomplishment of his purpose, and was subsequently nearly run over by an omnibus, in his eagerness to bag criticism; how he finally concluded to send the whole to his editor, with the sage conclusion that "Daly will have two opinions instead of one, and I shall not be responsible for the article,"—for the detail of all this, we must refer our readers to the *Revue;* but they will agree that M. Garnier has, at all events, a humorous way of putting his criticisms, and that we may fairly take the old gentleman with the "crooked nose and correct judgment" as the medium for expressing the writer's private convictions.

The volume for this year (vol. xxix.) contains in the *Introduction* some able and striking remarks on the past and future of architecture; in particular, an observation on the resemblance between the political and architectural "situations" of the present to-day. Architecture and politics are alike "cherchant toutes deux les fondements solides qui leur garantissent la stabilité et la sécurité."

"En politique, il nous faudrait un gouvernement définitif généralement accepté, en architecture un style généralement acclamé. Mais nous sommes loin de là; car, tandis que les politiques oscillent entre le Jacobinisme et le légitimité, en passant par le doute timide et le scepticisme pratique, les architectes oscillent entre le rationalisme utilitaire et les renaissances historiques, en traversant l'éclecticisme et la fantaisie. Les hommes politiques comme les architectes ont pour limites extrêmes de leurs mouvements la *restauration* et *l'utopie*, c'est-à-dire le fait ancien qui a cessé d'être, et le rêve qui n'est encore entré et qui n'entrera même peut-être jamais dans la réalité extérieure. . . . . À tout cela il faut substituer la science fondée sur l'exacte connaissance du passé et la rigoureuse observation du présent; car la stabilité et la sécurité n'existent, dans l'architecture comme dans la politique, que là où il y a organisation, c'est-à-dire obéissance générale à des *principes fondamentaux*."

We quote the above passage, not only for its intrinsic truth, but as an instance of the manner in which, in France (and, we might add, Germany), questions as to principles of art are regarded as of equal importance with any other great questions of principle,—a point which we are very far from in England; for there are few readers, and scarcely a writer among the specially "literary men" of this country, who would not regard such a comparison of politics with architecture as an absurd parallel between great things and small. An idea which will have to be eradicated before the artistic theory of life can have any chance among us. We rather regret that the author of the admirably-written introductory essay should have admitted into his review, in the same number, the rather trifling and amateurish illustrated paper by M. Espérandieu, on fanciful resemblances between head-dresses and buildings of different periods. The review of the exhibited designs of the late M. Duban is interesting; and also the article on the American Central Institute of Architects, one passage in which contains a suggestion in reference to France which, as it at present is equally applicable to England, we translate:—

"The success of the American Institute, as we see, is now an accomplished fact. It is, moreover, an example which young America gives to old Europe, which the Institute of America has given to our *Société Centrale des Architectes*, that it wants but the will to become itself the centre and the common bond of the local societies which may have been formed in the chief cities of our principal departments, if only it be willing to encourage them, to respect their local independence, and to call into the bosom of the Central Institute of Paris all the presidents of the departmental societies without exception. Assuredly, our central society would undergo a transformation considerable, but useful."

We leave our readers to make their own application.

Adding that the illustrations in this year's volume are, so far, fully equal in interest and excellence of execution to the standard previously maintained in the *Revue Générale de l'Architecture*, we take leave for the present of our admirable contemporary, with hearty good wishes for the future.

COAL, IRON, AND LABOUR.

The remarkable inflation which has taken place, and which shows as yet no signs of having attained its maximum, in both the price of coal and the price of iron, will hardly have failed to recall to the memory of many of our readers some of our recent remarks on the prospects of these important industries. In January last, in considering the very unreliable and optimist report of the Royal Commission on the Coal-Supply, we said, "There are many reasons to lead us to expect an immediate increase in the price of coal. To say nothing of the nominal increase, due to the steady influx of gold, we may remark, on the one hand, the uneasy feeling among the coal-miners, and, on the other, the mode in which winning is becoming more costly and hazardous." One alternative, indeed, only presented itself to the thoughtful mind, after carefully weighing the facts that were rather obscured than brought into full light by the report above cited. The menace of the approaching diminution of our coal-supply could only be counterbalanced by the no less formidable menace of increase in price. "Between the two assumptions," writes the author of an article in the *British Quarterly Review*, for the past month of July, "of the total exhaustion of all our coal by the year 1945, and of the duplication of the present price by the year 1886, lies the curve that will determine the future consumption and price of this important mineral in this country." The limiting dimensions have shown an increase more rapid even than that here indicated. During the past few months, observes a writer in the *Daily News*, "fuel of all kinds has increased in price to such an extent that serious apprehensions are now entertained, especially by those chiefly interested in domestic consumption, lest next winter should bring us a great dearth of coal, and prices so high that the whole British public will be put to no small inconvenience, and to enormous expense for fuel alone." It is reported that almost within sight of collieries raising large quantities daily, it is often impossible to obtain supplies for local consumption, unless after considerable delay, and at prices that would have been regarded as purely visionary a few years ago. "It may be safely asserted that, as a general rule, coal of all kinds is now nearly double the price it was a year ago."

We hold it to be extremely undesirable to indulge in predictions of misfortune, or to seek either to produce or to aggravate panic. But undue optimism is a far more frequent, and a far more disastrous, cause of ultimate panic than is even undue anxiety. We were profoundly convinced, long before the attention of the public and of the legislature was directed to the subject, of the ominous gravity of the question of our future supply of coal. We endeavoured, to the utmost of our power, to call attention to the mischievous spirit of making things pleasant which, as it appeared to us, characterised the report of the Royal Commissioners. The movement of the last few weeks has been more rapid than there was any precedent to lead any one to expect; but it is only to be encountered by looking the matter full in the face.

There are several distinct elements that influence the great augmentation in the price of coal and of iron. The general depreciation in the purchasing power of gold, not in this country alone, but throughout the world, due to the large supplies of the precious metal which are steadily poured in from the New World and the antipodes, is one important element of this rise. It is, however, an element of almost infinitesimal magnitude, if regarded as influencing sudden rise, or variation from month to month. But, none the less, it must be steadily regarded, not only as a definite value in the equation that we have to solve, but as one which will prevent, in any contrary rebound of the tendency of prices, their fall to the low quotations which formerly ruled in periods of depression.

More rapid, and no less certain, in operation, has been the result of the time movement. Whoever may benefit by the reduction of working hours (and that great benefit may in some cases result we are not about to deny), it will not be, for the present at all events, the country at large. It is undeniable that a reduction in the hours of labour is equivalent to a reduction in the productive power of the country. We are not comparing spasmodic effort with steady work. We do not forget the result of a long experience, which has convinced us that one main reason why a French workman does so much less work in a day than an English workman is, that the former insisted on working seven days in the week, and the latter on not exceeding six; and we would give every man the means of occasional recreation; but we have gone far beyond such limits as these. We shall not be thought to exaggerate if we say that we are witnessing a general reduction of the normal working day in England from ten hours and a half to nine hours. That is a reduction in the producing power of the country to the amount of one-sixth—a loss to England of a day in every week. Do not let us be met with the reply that more hands may be employed. One great object of the movement has been to compel the employment of more hands; but that is a consideration entirely beside the mark. Our workmen are limited in number—whether employed or unemployed. Our time is bounded by yet more rigid lines to be used or to be wasted. Our productive power consists of our full amount of labour of man, and beast, and machine, employed for our full amount of time. That is our power, employed or not; and the reduction of either element—by the emigration of our workmen or by the non-employment of our daylight—is a reduction, to that extent, of our productive power.

Another point of extreme importance to the workman, which, we think, has never been fully brought to his attention, is the following. The actual cost of labour, as we have recently shown, forms but a portion of the price at which any article of consumption is retailed; but it bears a definite relation to that selling price, whether it be two-thirds, a half, or any other value. Let us call it a half, which is not far from the mark.

Now, it follows that for every increase in the labour price, a double increase takes place in the selling price. This is not matter of calculation; it is matter of fact. We have seen it in action within the past few days. Is there an advance of 1s. 6d. per ton in the winning of coal, the sellers instantly advance it by 3s. In fact, the advance of the market price of coal in London (which may be increased even during the interval between the writing and the printing of these words) may be taken at fifty per cent. already—say, from 22s. to 33s., with a steady tendency towards 40s. It must not be thought that this difference goes to the miner; but it is the action of the miner which has, to a great extent, set the stone rolling. So with the ironmaker; so with the engineer; so with the carpenter; so with every combined and organising trade.

It must be evident to every workman, of every class, that any advance which he obtains in his wages must, sooner or later, be balanced by an advance all round. But he may think that, in such general advance, each trade will benefit. Let us look at that view of the case seriously.

Suppose, for the sake of illustration, a law were made by which, on a given day, the value of every coin were reduced to one-half. What would be the result? First, of course, every one who had a certain amount of coin in his possession would be the loser of half that amount.

That is simple. Then, every person who had neither coin nor engagement to pay, or be paid in coin would, at the very best, be no better off than he was before. Whether he would be worse off we will presently inquire, but in no way could his position be thought to be improved. Thirdly, the persons who were under engagements to pay or to be paid, in the old coin, would be thrown into a state of perplexity and confusion; and though some might for a little while appear to gain some advantage, no gross average advantage could result, and the usual distressing effects of disturbances in business relations would rapidly become manifest.

When the confusion had subsided, the following would be the result:—Every one who had a fixed income would be impoverished. Every one who had no fixed income would be free to earn what he could, but the money to pay his earnings would be diminished by great loss of custom from the persons of fixed incomes. The tradesman would re-adjust his profits. The man whose revenue is derived from his brain,—the literary man, the lawyer, the physician,—would be driven to demand higher salary, or larger

fees. He would suffer more than the tradesman, because it would be more difficult for him to raise his charges. The fundholder, the rentholder, the bondholder, would be mulcted in half his income. With regard to a species of property which we are accustomed to regard as more solid than such artificial property as funded debt, the result would be even worse. For not only would every 100*l.* of railway dividend be reduced to the purchasing value of 50*l.*, but the working expenses would be so increased by the rise in the price of coal, the price of iron, and the price of labour, that the dividends would be materially reduced even in their nominal amount.

Now, no one who has the slightest acquaintance with the lessons of industrial history, can doubt that a terrible stagnation in all branches of trade would follow. We have put, let it be said, an extreme case. But the principle holds good whatever be the amount of displacement of value. When such displacement takes place in consequence of great natural causes, working over long periods of time, as in the case of the increased yield of the precious metals, the whole framework of our social relations will accommodate itself by degrees to the change. But when any artificial proceeding, such as the class action of any trade or body of men, alters the natural relation of prices, the result is sure to be disastrous to some, if not to all.

Now, it is a fact, that at this time when, owing to causes which we cannot control, prices are rapidly rising everywhere, the action of organised associations is directed to the restriction, as before shown, of the productive powers of the country. It does not need any very unusual foresight to see that the result must be mischievous.

To return to the topic which now comes so closely home to every householder, to every employer of machinery, to every one who, with limited means, has to cook or to warm himself, or to raise steam for any purpose whatever. Political writers tell him not to be alarmed, to wait a little, to remember that ups and downs occur in all human events, and that as prices rise, so do they fall. "The existing state of things," says one of the writers whom we have above quoted, "will be only temporary in its character. The iron trade has been many times before in a highly inflated state, but prices have afterwards receded to an exceptionally low point." It is natural for public writers to take that tone. Many will do so from party motives alone, others from that general cheerful turn of mind which is acceptable to the public, and which we would be the last to undervalue. But it is not too much to say that all these comfortable anticipations blink those facts which we have endeavoured to bring into daylight. They lose sight of the fact that, besides those causes which fluctuate from year to year, those recurring changes which drove the price of bar iron down to 111s. per ton in 1851, and raised it to 198s. per ton in 1855, or that raised the rate of discount from 3 per cent. in June, 1865, to 10 per cent. in May, 1866; there exist now positive elements of increase in price, which the leaders of the social movement of the day are unwisely doing their utmost to aggravate.

There is, however, a mode of relief open to the consumer, whether of coal or of iron, to which it is extraordinary that public attention has not been hitherto more steadily directed. The collieries of the United Kingdom have been the pioneers of the coal getting of the world. But they do not form a larger proportion of the area of the known coal fields of the world than the pioneers of an army do to the rank and file. They cover 4 per cent.—one twenty-fifth part only—of that area. Moreover, the English coal fields have, to a great extent, exhausted their most easily-extracted beds. In other parts of the world the upper strata are still virgin. Now, of the increase which has already taken place in the market price of coal, so much occurs in the distributive process, so little goes to the miner, and so much to those who buy of the miner and sell to the consumer, that we must be near upon the limit when freight will cease to be a barrier. In other words, it will soon be cheaper, if matters go on as they do at present, to import coal than to burn our own. We will not attempt the details of a calculation at which, we do not doubt, shrewd brains and keen intellects are already at work. But we should not be surprised any morning to see an announcement of the arrival of foreign coal in our ports.* We may yet see a new meaning given to the proverb, "Carry coals to Newcastle."

From a purely philanthropical point of view, such a new feature in our trade may be highly admirable. In fact, we shall only witness the operation of one of those laws which political economy attempts to define and explain. We shall see that the level of price can no more be permanently disturbed than that of water. The barrier which keeps prices at different levels, in fact, may be said to be ignorance. As soon as the merchant is certain, or even adequately hopeful, that he will make money in a new course, his ships will steer in that direction. As soon as the speculator is clear that he will obtain a sale for a certain product, he will find the money for its development. If labour in one part of the world costs more than its proportionate value, surplus labour in other parts of the world will flow in to supply its place. If our colliers, or our iron-workers, will only work two-thirds time, and expect full pay, or more than full pay, for so doing, it is only a question of time, and of no long time either, before colliers in other parts of the world, where men are content to work full time for moderate wages, will be called into active and remunerative operation.

The case of iron is even more serious than that of coal. The activity of our collieries intimately depends on that of our ironworks. The present state of the latter is unexampled. We have just seen an award fixing the price of Staffordshire bar iron, for three months, at 16*l.* 10s. per ton; 16*l.* are quoted for several of the best-known brands. In 1851, as we have said, the average price of bar iron was 5*l.* 11s. per ton. During the twenty years from 1845 to 1866, the extreme fluctuations were about 30 per cent. on the highest price, which was 9*l.* 18s. in 1854. In 1861 and 1862, the price was 6*l.* 5s. per ton. Thus the present rate is exceptional. Now, in coal, there is no doubt that we possess an article of unsurpassed excellence. We have, of course, all sorts. We are not speaking of everything that is black. But we have, in the best bituminous coals of the northern district, and in the pure anthracite of the Welsh basin, natural products which are respectively among the best of their kind. Secure in this excellence, we may allow inferior qualities of coal to contend in price with one another, there being always a means of balancing, more or less exactly, the commercial with the chemical, or heat-producing value; and the difference in the price of labour must be considerable before foreign coal can permanently compete with English coal in our own ports. That it may, almost immediately, have the effect of reducing any undue inflation of price we have intimated; but it is a great step from that to a permanent and successful rivalry.

This is not the case with iron. We have before mentioned the fact, that it is due to moral or political reasons alone, not to commercial and mechanical reasons, that Russia has not already become the great iron mine of the world. Charcoal-made iron, of the best quality, can be produced in Russia at a less cost than inferior coal-made iron in the United Kingdom. Now a certain amount of profit is enough to overcome almost every obstacle: that is the old secret of the smuggler. Such a price as iron now commands in this country is almost certain, humanly speaking, to kindle furnaces in Russia. The Government of that country is liberal and enlightened in matters relating to the development of the national resources. Such an opportunity can hardly fail of being seized. And there is this difference between the two industries, that of the winning of coal and that of the smelting of iron. The latter is harder to establish, but, when established, it takes a firmer root. The best colliery is at best but a temporary arrangement. The finest seam will be exhausted; the limit to be won from a given shaft will be reached, sooner or later. But a thoroughly well-appointed ironworks, resting for its supply of fuel on the sixty years' division of the forests within easy tramway distance of its forges, is an establishment which, when once it gets command of the market by the low price of a good brand, may be regarded as very permanent in its position.

We confess to be among those persons who believe that, as charity begins at home, philanthropy, to be genuine, must first germinate as patriotism. The neighbour whom we ought to love as ourselves need not be one of our kith and kin, but he is not a yellow or a black imaginary sufferer at the antipodes, who is no neighbour at all. It will be but little consolation for us if we hear that for a furnace blown out in Wales a better-appointed furnace is kindled in Russia. It is poor comfort to be told, if we see hundreds of our English fellow-subjects with straight backs and wan faces, that their suffering is economically active in equalising prices throughout the world! We own, in these matters, a selfish motive. We believe it to be a just and enlightened selfishness. We prefer to do good by acting, rather than contribute to possible good by suffering. We have, or had, in many important industries, the lead of the world. We do not wish to forfeit any advantage we have before it is unavoidable. We regret, and we do our best to fight against, whatever in our judgment tends to throw away that advantage. We are convinced that the present tendency of artificial trade combinations for at once losing time, and increasing the cost of working, must handicap us in the great race. And we know that it is on the owner and producer of labour that the first brunt of misfortune will fall. It is easy for the man of capital to displace the scene of his operations. It is far more difficult for the workman to do so. In fact, when the time arrives that labour is freed from local ties, and able to flow, like water, to the vacant place, prices will be close upon an universal equality. But a good deal of work, and, we fear, a good deal of suffering, must be gone through first. What we are chiefly anxious to show is, that artificial steps taken in order to raise wages, and to increase the number of hands employed, cannot be of any real or permanent service to the workman, but that, on the contrary, by disturbing the relations of commerce, they run the terrible risk of changing its course, and of inflicting an injury on the productive character of this country from which it may never recover.

* Since this was written such an incident has occurred

PRINCIPLES OF MECHANISM.

A MACHINE is a contrivance interposed between the power to be employed and the work to be done, in such a manner that, firstly, the part to which the power may be applied shall be of suitable form and strength to receive it, as the piston of a steam-engine; and, secondly, that the other extremity of the machine, or the part which performs the work, shall likewise be suitable in form, strength, and the direction in which it moves, to the work to be done. Between these extremities lies the mechanism which transmits the power acting on that part of the machine which receives it directly from the motor to that other part of the machine which performs the work, as the cutting-tool of a lathe or the bucket of a pump. "Machines, in fact, are interposed between the power and the work for the purpose of adapting the one to the other." Professor Willis* says that by defining mechanism in the abstract to be a combination of parts for the purpose of connecting two or more pieces, so that when one moves according to a given law the others must move according to certain other given laws, this branch of the subject may be reduced to geometrical principles alone; whereas, by considering mechanism, as usual, as a modifier of force, the subject becomes embarrassed by a condition foreign to the connexion of parts by which the modification is produced; and which condition and its consequences admit more conveniently of separate investigation.

These three classes of mechanical organs are so far independent of each other that any given set of working parts may be supplied with power from any source. The principles upon which the construction and arrangement of these three classes are founded are different. Thus the receivers of power, firstly, derive their form from a combination of mechanical principles with the physical laws which govern the respective sources of power. The working parts, secondly, derive their form from a combination of mechanical principles, with considerations derived from the manner in which the work is to be performed. But the principles of the interposed mechanism admit of being developed without reference to the powers employed or transmitted, or to the resistance or work to be done.

The term mechanism must be understood to be in this work confined to those mechanical combinations which govern the relations of motion only, and which, therefore, admit of being entirely separated from the consideration

* Principles of Mechanism. By Robert Willis, M.A., F.R.S. Second edition. Longmans, Green, & Co. 1870.

of force. This is not the view that an engineer or millwright takes of a machine; he considers it necessary to investigate the proportion between the forces and resistances in any given case, and the strains thrown upon the different parts of the mechanism by their application, and thus to find the requisite strength of each part; but his investigations may possibly be much facilitated by adopting Professor Willis's view, which is to investigate the various combinations of pure mechanism upon geometrical principles alone.

The different forms which the details of actual construction of machinery may take, and their combinations and varied methods of framing them together, are mainly determined by the strains to which the machinery is to be exposed, and form the branch of constructive mechanism.

It will be useful to recapitulate some of the ordinary definitions and measures of motion and velocity.

A body may be at rest either absolutely or relatively, but it is only in the latter respect that the state of rest can be considered in the present case; thus a body which remains in the same place in a boat or a carriage is at rest with respect to the boat or carriage, although these may be in motion; and so a wheel or other portion of a machine may be carried into different positions relatively to the fixed frame, and yet remain at rest with respect to the arm or carriage which carries it. A body is in motion when it occupies successively different positions in space with respect to some other body, motion being relative as well as rest. Two bodies moving with respect to a third will be at rest with respect to each other if they retain in their motions the same relative positions; or a body absolutely at rest may be said to move with respect to another moving body, if the latter be assumed as the standard to which the motion is to be referred. The continuous line which a moving body describes in space is termed its path. The path being assigned, there are only two directions in which it can move in that path. The path and direction of a given point being assigned, it may move in this part and direction quickly or slowly, that is with a greater or less velocity; and this velocity is estimated by comparing the space passed over with the time occupied in describing it.

When a point describes equal portions of its path in equal successive times, the motion is said to be uniform, and the velocity is measured by the space (that is the length of path) described in the unit of time. The units usually employed are feet and seconds. Since the space described is proportional to the time employed in describing it, the measure of velocity is obtained by dividing the number of feet passed over by the number of seconds employed. Thus, if 9 ft. be passed over in three seconds, the velocity is said to be 3 ft. per second. The terms *rotation* and *revolution* are often both employed in the same sense by mathematicians, as well as in common language, but Professor Willis prefers in mechanism to employ the word rotation only for the act of turning about an axis, and revolution, or turn, for the course of a rotating body from one position with respect to some other given object to its return to the same relative position. Period should be confined to the sense of "time in which anything is performed, so as to begin again in the same manner," as defined by Johnson. The angular velocity of a rotating body is measured by the linear velocity of a point whose distance from the axis, or radial distance, is equal to the unit of space; and the body is said to rotate uniformly when its angular velocity is uniform.

The motion of every point of a given piece in a machine being defined by path, direction, and velocity, it will be found that its path is assigned to it by the connexion of the piece with the framework of the machine, but its direction and velocity are determined by its connexion with some other moving piece in the train. A train of mechanism is composed of a series of moveable pieces, each of which is so connected with the framework of the machine, that when in motion every part of it is constrained to move in a certain path; thus wheels, pullies, shafts, and rotating pieces generally are so connected with the frame of the machine, that any given point is compelled when in motion to describe a circle round the axis, and in a plane perpendicular to it. Sliding pieces are compelled by fixed guides to describe straight lines, and other pieces in other paths. The pieces are connected in successive order, so that when the first piece in the series is moved, from any external cause, it compels the second to move, which again gives motion to the third, and so on. The act of giving motion to a piece is termed driving it, and that of receiving motion from a piece is termed following it. The piece which transmits motion to the next is the *driver*, and that which receives motion is the *follower*. The various changes of motion are effected by the various modes of connexion, and the different cases under which these modes of transforming motion by transmission are arranged are termed the mechanistic connexions. Thus motion is communicated by rolling contact (as at the pitch-circles of the teeth of spur-wheels), or by sliding contact (such as takes place between the individual teeth of wheels, by the action of a cam, or a screw), the connexion being in either case an actual contact; or the motion may be communicated by link-work (such as cranks, with connecting rods), or by wrapping connexions (such as bands passed over pullies), in which cases the connexion is by intermediate contact.

Professor Willis groups all the simple combinations of mechanism for the modification of motion under four heads:—

1. Where the directional relation and the velocity ratio are both constant.

2. Where the directional relation is constant, but the velocity ratio varies.

3. Where the directional relation changes periodically, and where the velocity is either constant or variable.

4. Intermittent motions, wherein the continuous motion of one piece communicates a motion to the other, with intervals of perfect rest.

And he examines each one in succession, and passing on through "trains of elementary combinations," and "mechanical notation," we come to a chapter on "*Reduplication*," a term which is here applied to a mode of modifying motion which depends upon a totally different principle from those connexions before described as rolling, sliding, link-work, or wrapping connexions. It is principally employed in the construction of tackle all sorts. Then we have aggregate combinations, adjustments, and *friction*.

If we lay down horizontally a block or a slab, of whatever material, and upon it a similar block or slab of the same or other material, and, having made an indent in the surface of the upper block for the purpose of abutting a rod against it, and making the upper block slide upon the lower one, we shall find the inclination of the rod to vary with the nature of the surfaces in contact, when inclined just sufficient to cause the upper block to begin to slide. If from any point of the rod we let fall a perpendicular upon the surface of the upper block, we shall resolve the two components of the force which presses in the direction of the rod into one which presses the two blocks together vertically, and another which tends to push the upper block horizontally, and make it slide along the lower one. If for any given material or state of the surfaces in contact, we find this limiting angle of resistance to be, say, 10 degrees, which is the limiting angle of resistance of metals on metals, no increase of the pressure in the direction of the rod will cause the upper block to move upon the lower one, *because the ratio of the pressing component to the pushing component remains the same.* If this angle be diminished by inclining the rod more nearly to a vertical position, the pressing component is increased, and the pushing component diminished. Hence the block *cannot be made to slide*, whatever force be applied in the direction of the rod. On the other hand, if the limiting angle be increased by inclining the rod more horizontally, the pressing component is diminished, and the pushing component increased; so that the block *cannot be prevented from sliding*, whatever be the amount of force applied to the rod.

The friction of materials in contact with unguents interposed is given as one-twelfth of the pressure, and the limiting angle of resistance 5 degrees; of metals on metals one-sixth of the pressure, with an angle of 10 degrees; of wood on wood one-third of the pressure, with an angle of 18 degrees; and of bricks and stones two-thirds of the pressure, with an angle of 33 degrees.

The magnitude of the friction between a pair of plane surfaces, the one fixed and the other movable, is governed by three principal laws, which have been confirmed by innumerable experiments. The first law is that *the magnitude of the frictional resistance between a given pair of surfaces of any materials is proportional to the pressure that keeps them in contact.* The second law is that the frictional resistance is *unaffected by the area of contact*, which may be shown by placing the upper block first flatwise, and then on edge, when the friction will be found to be the same in both positions. The third law is that the frictional resistance of solids is wholly *unaffected by the relative velocity of the rubbing surfaces.* It is worthy of remark here that the laws of friction of solids and fluids are essentially different with regard to velocity, for while the friction of solids is independent of it, that of fluids *increases as the square of the velocity.*

It is curious to observe that, taking the mean value of friction at one-third of the pressure which generates it, if we take a cylinder of any diameter, as the barrel of a common windlass, and fix it, and throw a rope over it, any weight tied to one end will support a weight about three times as great at the other end. If the rope be taken once round the barrel, and the two ends hang freely down, the small weight will support one twenty-seven times as great at the other end. Thus, with half a coil, as in the first case supposed, the rope will support at one end three times as much as at the other; with one complete coil nine times as much; with a coil and a half twenty-seven times; with two coils, eighty-one; with two and a half coils, 243; with three coils, 729; with three and a half coils, 2,187; and with four coils, 6,561 times the weight suspended at the other end. In drawing water from a well where the depth is not great, or winding up earth from sewer excavations, this property of coil friction is sometimes employed by taking three or four coils of the rope round the windlass barrel. The empty bucket or skip takes the place of the small weight in the illustration, and the full one that of the greater weight, the coils grasping the cylindrical surface so firmly as to sustain the load. But although the friction of these coils is sufficient to sustain the load, there is a practical difficulty in the method, from want of clearance room, where the buckets or skips pass each other up and down.

Professor Willis's book has already an established character: we need only mention the appearance of a new edition.

THE INTERNAL EMBELLISHMENT OF ST. PAUL'S CATHEDRAL.

The "Surveyor to the Fabrick," Mr. F. C. Penrose, having now completed his designs for the internal embellishment of St. Paul's, is exhibiting them, by the courtesy of the Dean and Chapter, in the Chapter-room. The question of the adoption or otherwise of these designs is not at present ripe for discussion, and we confine ourselves to publishing Mr. Penrose's own description of his scheme, simply premising that it is set forth in some very effective drawings by Mr. Woodington, Mr. H. W. Brewer, and Mr. Michael:—

Quite irrespective of the question of cost, there seem to be only two ways of ornamenting such a building as St. Paul's: one, that of profusely covering every available space from vault to pavement with subjects combined with enriched material or ornament; the other, that of concentrating the chief attention on certain points, and leaving much of the framework of the building unaltered, proper care being taken to connect the ornamented portions by adequate but subordinate embellishment. In designing the scheme, of which a considerable part is now submitted, conformity with the last-named principle has been aimed at.

There are four main points on which the ornament is concentrated:—

1. The choir, including the apse and the baldachino.

2. The dome.

3. The painted windows at the ends of the four arms of the cross.

4. The smaller dome at the west end of the nave.

With the exception, to some extent, of the last-mentioned, much less display of *coloured* decoration is proposed for the nave and transepts than for the choir and dome.

The connexion between the parts more elaborately treated is looked for from the vaulting, which is to be richly worked in mosaic throughout (although colour is to be used predominantly in the choir and dome), and from the pavement and the attic panels, in which a good deal of marble inlay is contemplated. Ceramic ornament might, however, be partly substituted for marble inlay in the attic panels.

In the apse, real marbles are proposed to supersede the painted work introduced as a tem-

porary expedient by Sir Christopher Wren. This would necessitate the carrying on the marble work to some extent along the choir, but not to the transepts or nave; and the principal cornice and the pier arches and their supports are intended to remain Portland stone, as at present. Some marbling to the panels and plinth, and gilding to the soffits of the arches, would, however, probably be requisite. The object aimed at, however, is to connect the rich work in the vault and clearstory with the pavement, with no great alteration of the existing framework, a treatment which not only appears peculiarly proper for St. Paul's, but has the advantage of having several very important and successful analogies in Italy.

As respects the windows. There are at the east end eight windows,—five already occupied; at the west end, three windows, all already occupied; and at the ends of the two transepts, six windows, all unoccupied, which admit of being treated pictorially; but the glazing of nearly all requires to be altered to suitable patterns, only seven of these windows having as yet been done.

The designs at present prepared for the committee are shown on three perspective drawings, and a section of the cathedral from east to west to serve as an explanatory diagram, and two models. The choir, roof, and tribune are shown by one of the perspective drawings, and a model to the scale of 1 in. to the foot. As respects colour, however, the vault in the model more nearly represents what is now intended for the nave and transepts, and the perspective drawing that proposed for the choir.

The principal feature in the tribune, after the precedent of several of the early Christian churches, is the colossal figure of our Lord, with the signs of the Apocalypse.

The subjects in the apse windows are those combined in that verse of the Litany, "By thine agony and bloody sweat: by thy cross and passion: by thy precious death and burial: by thy glorious resurrection and ascension: and by the coming of the Holy Ghost: Good Lord, deliver us." In connexion with these subjects are the figures of angels in the spandrels of the clearstory windows of the choir, bearing the "elements of the Passion,"—such as the Cross and Scourge, the Crown of Thorns, &c.

The pavement in the apse is of choice marbles, forming part of the original construction; but the pilasters and parts of the walls were painted as mentioned in the "Parentalia," "to serve the present occasion." It is now proposed to substitute real for the painted marbling. The group proposed for marble intarsia, under the apse windows, is from a design by the Baron de Triqueti.

The Baldachino, of which there is both an uncoloured model and a coloured perspective drawing, is composed, so far as it can be recovered, from an imperfect model and a short description in the "Parentalia." The columns and entablature are intended to be of marble, and the superstructure of bronze.

The dome is exhibited by a model to a scale of ½ in. to the foot, as yet finished only as respects the cupola, and by a perspective drawing. The figures in the spandrels are intended to be the four major Prophets and the four Evangelists. One, that of St. Matthew, is taken from Mr. Watt's design already executed in mosaic, and three of the major Prophets from Mr. Stevens's designs; the others are mere sketches. The figures in the cupola are by Mr. Woodington, by whom are also those in the upper part of the model of the east end. The subject of the cupola is the Te Deum. There are two main horizontal lines of pictures, with eight compartments in each, the Apostles being seated at the twelve gates of the heavenly Jerusalem in groups of three. These occupy the north-west, north-east, south-west, and south-east compartments of the lower range, those toward the cardinal points being devoted to the Prophets and Martyrs.

Above these are the angels, cherubim, and seraphim, and the powers of the heavens, represented by angels bearing the signs of the sun, planets, and stars. These, with the worship of the Cross and of the Lamb, occupy the eight upper compartments; the last-named subject having been already suggested by the inscription running round the frieze of the drum, "Worthy is the Lamb that was slain to receive honour and glory." . . . . . The whole is surmounted by a continuous ring of angels and blessed spirits, playing on various instruments of music, or singing "Holy, holy, holy, Lord God of Sabaoth." The interior of the cone above the cupola is intended to have gold stars on a blue ground.

This treatment of the interior, whilst preserving the general framework of the architecture with very little alteration, offers very considerable and probably sufficient spaces for iconography, *i.e.*, arrangement of subjects; for, in addition to the figures proposed for the apse and choir, the great west door, if covered, as has been proposed, with bronze, admits of a great series of Biblical subjects. The exterior might well be devoted to the history of St. Paul, and the interior to the acts of the other Apostles.

The western dome offers a fine scope for the Creation. This subject was first proposed for it by Archdeacon Hale, and has met with very general acceptance, including that of Mr. Burges, in his scheme for the iconography of the cathedral. The north and south chapels might receive on their panels subjects derived from more recent ecclesiastical history. The panels on each side of the windows of the aisles offer places suitable for historical subjects in bas-relief. There are twelve such panels in the nave, eight in the transepts, and twelve more in the choir. There would still be spaces below for monumental subjects in continuation of those which have already been commenced.

There are twenty-two windows, including one in the north chapel and two north and south of the western dome, which either have received or admit of receiving Scriptural subjects. Lastly, there is the great dome, with its eight spandrels, its eight niches in the drum, and its cupola, which, according to the design submitted, would have about 200 figures, many of which, especially the Apostles, Prophets, and Martyrs of the lower range, would admit of individuality of treatment.

F. C. P.

CHARING-CROSS HOSPITAL.

Extensive alterations and enlargement of this hospital have lately been effected. The establishment has for many years past had only a passage of entrance, and a small back staircase as its means of access to the several wards, accommodating about 150 patients. It has now a spacious hall, 28 ft. by 20 ft., with a periphery of columns, of simple character and effect.

On each hand are a pair of folding doors. One leads by a corridor to the board-room and other official parts of the hospital; the other to the out-patients' department, having a range of waiting-rooms, with physicians' and surgeons' departments, and a dispensary.

The out-patients have also a separate entrance provided in Chandos-street, as well as a way of egress by a caged turnstile to avoid confusion in the stream of attendants.

The medical school has also a distinct approach; and, besides a hall and reading-room on the ground-floor, the greater part of the basement is devoted to their accommodation. It comprises a good dissecting-room with top-light, and lavatory for students, an enlarged post-mortem room, a museum, chymical and pathological laboratories, and lecture-room. The new staircase, exceeding 20 ft. square, and 40 ft. high from ground-floor, is well lighted by a cove lanthorn, as well as by side windows, and is provided with a sun-burner for winter illumination.

In the construction of the stairs, besides tailing into the walls, they have cast-iron carriages moulded and framed together, and a balustrade throughout; a lobby, of ample width, leads on each story to a range of wards about 200 ft. long and 28 ft. wide.

The first is devoted to female patients; the second to male patients; the third to obstetric cases and children's wards; and an operative theatre.

Each floor is provided with lavatories and sculleries, and groups of water-closets. Urinals, &c., are erected in the rear of the hospital. There has been also remodelling of the drainage by the substitution of glazed earthenware drain-pipes, so as to prevent the ravages of vermin, and its consequent escape of noxious gases. The latter operation has also enabled the authorities to form a new and lofty kitchen, which was greatly needed. These changes have placed the hospital in a greatly improved position before the public, and the Council have felt justified in giving more prominence to the structure by the addition of a portico. It is composed of four monolithic shafts of Portland stone, 11 ft. high (Grecian Doric), supporting an entablature and pediment of suitable proportions.

The architect, Mr. James Thomson, has been careful both internally and externally to sustain the simple and appropriate character which had been given more than forty years ago to the original structure by Mr. Decimus Burton; and should public support justify the council in doing so, they propose yet further to extend their facilities of "*doing good.*"

LABOUR-SAVING MACHINES FOR JOINERS' WORK.

It would almost seem that every fresh collision between masters and men leads to the production of improved machines for lessening the necessity for hand-labour. On Thursday, the 1st of July, a number of the leading builders and contractors met to test a new series of labour-saving machines for joiners' work, at the works of Messrs. A. Ransome & Co., King's-road, Chelsea.

The series of machines, eleven in all, have mostly been brought out within the last twelve months, and each exhibits improvements and features of novelty which have not hitherto been imported into this class of machinery. The chief point which distinguishes them from other machines of this class is the very high speed at which they are driven, which not only enables them to turn out a proportionately greater quantity of work, but the increased velocity on the cutting edge of the tool gives a remarkably high finish to it. In order to enable the machines to be driven at these high speeds, special arrangements have been made to secure effective lubrication of the various working parts. The bearings of all the high-speed spindles are constructed with a large oil-chamber underneath, from which the oil rises to the spindle through a piece of felt fixed in a diagonal slot running through the bottom brass. The speed at which these spindles revolve is such as to pump the oil through the felt, so that it flows freely over the spindle, and channels are formed in the bottom bearing, through which the surplus oil finds its way back into the receiver; the result of this is that the spindles are literally floating in oil, which is being continually pumped up, and filtered as it comes through the felt. The cutter spindles, many of which perform as many as 6,000 revolutions a minute, are made of a special quality of cast steel, which, although extremely hard on its outer surface, and capable of taking a very high polish, is also soft and tough in the centre, thus combining the greatest amount of strength and toughness with the minimum diameter. The bearings are all of great length, and, notwithstanding the high speed at which they work, run perfectly cool.

The first machine we noticed was one for cleaning off and sand-papering doors, shutters, parquetry, &c., entirely without skilled labour; and a good notion of the saving which it effects can be formed from the fact that when worked by two labourers, it will clean off both sides of a full-size door, leaving it glass-papered and ready for painting, in four minutes.

The machine exhibited (which was made in America) is of somewhat crude construction, but Messrs. Ransome & Co. are occupied in constructing one with various improvements, the framing of which will be of iron, and will have a self-acting feed motion. This alteration will enable it to be worked by one man, and thus dispense with the labour of the second man who is required with the American machine to assist in feeding the work through. We were surprised to see the very rapid manner in which the machine removed considerable inequalities in the doors that were passed through it; some of those which we saw cleaned off were very rough, but they left the machine perfectly flat and smooth. The glass-paper used is specially manufactured for the purpose, and we are informed that one set of paper, which costs about 4d., will last for five hours in constant work, without requiring renewal. This machine can scarcely fail to come largely into use.

The planing and moulding machines, of which there were two, are from entirely new designs; their chief features being their great compactness, the high speed at which they are driven, the powerful feeding apparatus, and the arrangement of the cutter-blocks, which are so placed as to enable the cutters to be readily adjusted. One of these machines was turning out a bold bolection moulding, with excellent finish, at the rate of 30 ft. a minute, while the larger one was running 7-in. architrave mouldings with equal finish at the rate of 24 ft. a minute.

The Richards's patent mortising machine at-

tracted considerable attention on account of its simplicity and the novel method for reversing the chisel, which is effected instantaneously, while the machine is making 500 cuts a minute.

The tenoning machine, which is fitted with an upright cutter-spindle for forming double tenons, also scribes the shoulders at the same apparatus, and the distance between the shoulder and the tenon is governed by self-acting stops, which avoid the necessity of marking by hand and ensure the greatest accuracy.

Messrs. Ransome's patent "complete" joiner is already pretty well known in the trade, having been exhibited for the first time at the Wolverhampton show twelve months since. The one exhibited on the present occasion will plane boards up to 9 in. wide by 3 in. thick on all four sides, or cut mouldings up to 9 in. wide, also worked on all four sides, at rates varying from 8 ft. to 15 ft. a minute. The same machine makes very perfect tenons; several being cut at the same time, and the shoulders scribed in the same operation. A peculiar feature of this joiner consists in the planing and tenoning arrangement being entirely independent of the saw-spindle; thus enabling either side of the machine to be worked, independently of the other,—two distinct machines.

A band-saw, of entirely new design, was at work, cutting sweeps in wood of 12 in. thick. The main standard of this machine is cast hollow, giving great strength and stiffness without undue weight; and the design gives great space between the saw and the standard in which to turn the work. The saw is supported immediately above and below the work, by an improved packing-box, which Messrs. A. Ransome & Co. now fit to all their band-saw machines. This packing-box supports the saw not only on the back, but on the sides, and enables it to bear considerably more forcing than it would take in the ordinary manner.

An improved saw-sharpening machine was working with Ransome's patent emery discs, invented by Mr. F. Ransome, of East Greenwich. These discs, besides cutting very freely, are entirely free from the nauseous smell, which is a great drawback to those in general use.

We also noticed a small machine for planing, shaping, chamfering, mortising, and boring, which is so arranged that two lads can work at it at the same time. It is more particularly suited for short work. The mortises are formed with revolving bits on the French principle.

A Shute's patent mitreing machine, which cuts with ease mouldings up to 5⅛ in. wide, completed the set.

All these machines were driven by one of Messrs. Ransomes, Sims, & Head's new patent economic expansion portable engines, fixed on cast-iron saddles. These engines appear to be peculiarly adapted for driving builders' machinery, as the boilers are constructed with large fire-boxes for burning saw-dust, chips, and other waste wood, and have various appliances for economising the fuel and heating the feed-water before entering the boiler.

LAW AND THE DRAMA.

The recent decision in the case of funds left by the late T. P. Cooke for the advancement of dramatic literature, seems to show that no man can hope to have even his reasonable and proper wishes carried out after his death. The managers of the Dramatic College were made trustees of a sum of money in order that a premium might be offered at certain intervals for the best original drama connected with the sea that might be submitted, the selected drama being afterwards acted, if it could be so arranged, for the benefit of the funds of the Dramatic College. The first result was very successful, and "True to the Core" brought a considerable sum of money to the institution. Since then, through accident or want of proper management, a good drama has not been obtained; and on the argument that the sum offered is not large enough to induce capable authors to submit works in competition, and the assertion that Mr. Cooke's main object in the bequest was to benefit the Dramatic College (which we assert from personal knowledge is incorrect), the law has handed over the capital sum to be used for the general purposes of the college. The act seems to us equally unjust and unwise. The amount will be swallowed up, as hundreds and thousands have already been swallowed up before by this institution, and dramatic literature, the progress of which Mr. Cooke desired to aid, will be in no degree advanced. Surely if it were found that the amount offered was not large enough to obtain good plays, a reasonable course would have been to allow it to accumulate, and offer a larger premium at longer intervals. This occurrence will scarcely tend to increase the number of specific bequests to the college for specific purposes.

EDUCATION FOR THE STAGE.

The following communication speaks for itself. We commend it to the attention of those who desire the improvement of our stage:—

I have long been impressed with the *absence* of professional education in many of those actors and actresses who essay a high standard (or any standard) in the dramatic world; and it has occurred to me that probably the most useful and *appropriate* memorial to Shakspeare would be to establish a school or college for the instruction of intended actors or actresses under such professors as have distinguished themselves in their art, and retired from the stage, many of whom would, no doubt, be delighted to impart their knowledge to the rising generation.

I should much like to see a "Shakspeare College" established, and throw out this suggestion for your opinion.

R. Richardson Gardner.

ALEXANDRA PARK AND PALACE.

We have received from the Lord Mayor copies of certain resolutions passed at a meeting held in the Mansion House, July 23rd, approving of a plan suggested to enable the people themselves to become the purchasers of the park, and pledging the meeting to make "every legitimate effort to ensure the prompt and complete success of the enterprise." As, however, the plan does not accompany the resolutions, we are unable to judge whether or not it is likely that the meeting will do what it promises. There have been so many flashes in the pan in connexion with the Alexandra Palace and the recreation of the people, that we have lost faith in promises. That it is quite time, and very desirable, that the building and grounds should be properly utilised, we say again, as we have said before; but, have the right men come? From the beginning till now, the whole affair seems to have vibrated between bungle and job.

WANTED: AN ECONOMICAL STOVE.

Sir William Bodkin has a friend who wishes to lead persons conversant with the subject to consider the practicability of producing a form of stove for ordinary sitting-rooms and kitchens, to consume as far as possible its own smoke, and to ensure the most perfect and judicious use of the coal to be consumed therein, and has empowered Sir William to guarantee any reasonable amount (say 500*l.*) for prizes or otherwise, in the confident expectation "that the effort may lead to a satisfactory solution of what has been truly stated to be one of the urgent problems of the day—'the attainment of sufficient warmth for cooking and for comfort, with the least possible consumption of coal.'" The council of the Society of Arts have accepted the duty of appealing for designs, and have appointed a committee to confer with Sir William Bodkin, and concert with him the proper action to be taken.

We advise some of our readers to set to work and get the prize, which will be not the 500*l.* offered, but a fine fortune.

THE PROPOSED DUBLIN CENTRAL RAILWAY STATION.

The proposed new central railway station in Dublin, which has been before a committee of the House of Commons within the last few weeks, will be one of the largest ever yet built in any part of the United Kingdom. The station, which has been designed by Mr. Barry, is 2,000 ft. in length, and 146 ft. in width at the narrowest point, the platforms being very extensive, and intended to meet the most expansive requirements of the anticipated traffic. In addition to the ordinary platforms, there will also be a special platform 700 ft. in length, which is intended for the marshalling of the trains, and there will also be ample accommodation for the exchange of traffic. In length of platforms and other points, the proposed station will exceed most of our city termini, and the cost is estimated at 540,000*l.* The site selected is considered the best adapted for a central station, being in the vicinity of the Bank of Ireland, Deane-street, and the Castle. It is proposed to unite the new station by connecting lines with four of the railways having their termini in the city—namely, the Great Southern and Western, the Midland Great Western, the Dublin and Drogheda, and the Dublin and Kingstown lines. In proof of the citizens of Dublin being in favour of the project, it may be stated that when the Bill was before Parliament a large number of the most influential inhabitants of the city gave evidence in favour of the Bill.

MODEL OF THE HOLBORN VIADUCT.

Mr. Thos. D. Dighton, who has executed in his time many very fine models of architectural and sculptural works, has just now completed for the Corporation of London an elaborate model of the Holborn Viaduct where it crosses Farringdon-street, as executed from the designs of Mr. Haywood. The subject scarcely lends itself to the production of a compact work of art, the sectional blocks of houses which butt diagonally against the bridge necessarily give it an aspect of incompleteness, but this was not the real object of the model, which is intended to show the actual construction of the bridge and adjacent roadway, with the chambers for gas and water pipes, the vaults and sewer. All the engineering work of the bridge is most carefully produced, and the ornamental ironwork, of which there is a very large quantity, is represented with amazing fidelity and elegance. The model is to be placed in the Guildhall Library, now rapidly approaching completion.

PROFESSOR DONALDSON.

The King of the Belgians has conferred the Cross of the Order of Leopold on Professor Donaldson, and the Belgian Ambassador has delivered to him the cross and credentials of the order. Professor Donaldson has been a member of the Belgian Academy for thirty years.

We recently gave at account of the proceedings at the Centenary Festival of the Academy of Sciences and Fine Arts at Brussels, on which occasion Professor Donaldson attended as a delegate from the English Institute of Architects, and it is doubtless in recognition of his services in that connexion, as well as his numerous contributions to the history of his art, that has led to the honour lately conferred upon him. There is, perhaps, no member of the profession more universally esteemed, both at home and abroad, than Professor Donaldson, and not one who has striven more earnestly to uphold the status of the architect. We heartily congratulate him upon the well-merited distinction that has been accorded him.

THE ARCHITECT OF SOLOMON'S TEMPLE.

One of the great points sought to be made by the writer of the recent article in the *Quarterly Review* on "The State of English Architecture," depends largely on his assumption that Hiram, whom Solomon fetched out of Tyre, was the architect of the Temple at Jerusalem. Dr. Barlow, on the other hand, is content to allude to him, in your last number, as "Old Hiram, or Huram, brassfounder to King Solomon." Can it be possible that they have headed the architects sculptured on the Albert Memorial,—Callicrates, Erwin von Steinbach, Wren, and the rest,—with a brassfounder?

Such seems to be very nearly the case; for though he was an artist in brass, and a good many things besides, neither of the accounts which we have of him,—in the Books of Kings and Chronicles,—give the slightest hint of his responsibility for the *design* of the Temple. They are not merely silent as to his architectural qualifications, they do not bring him on the scene until after,—probably long after,—the whole of those arrangements which we call, for distinction, "architectural" had been settled. Not only were the various parts, with their relation to each other, determined on independently of Hiram, but the most minute details of the whole house, with its surroundings, were fixed. So far as we can see, therefore, nothing but the intelligent execution of the work remained for him and the other "willing skilful men" whom David fore-

told that Solomon would have with him for the service.

If, indeed, the account in Chronicles (xxviii. 11) is to be relied on, David, who undoubtedly projected the building, and left a vast store of money and materials for its erection, left also the drawings. He "gave to Solomon his son the pattern of the porch, and of the houses thereof, and of the treasuries thereof, and of the upper chambers thereof, and of the inner parlours thereof, and of the place of the mercy-seat, and *the pattern of all that he had by the Spirit*," even to the vessels for the service, in minute detail. ["All this, said David, *the Lord* made me understand, *in writing, by his hand upon me*, even all the works of this pattern" (ver. 19).—Ed. *B.*]

If there is any truth in all this, what title has Hiram,—however respectable otherwise,—(I will not say to the patronage of the *Quarterly* reviewer—but) to that salient angle on the frieze of our new memorial? Indeed,—as Solomon lays no claim to the honour,—is there any person, other than King David, who ought to be regarded as the architect of Solomon's Temple? Thos. Blashill.

INSURANCE AGAINST LIGHTNING.

Sir,—In reply to the letter of "R. J.," which appeared in your issue of the 29th ult., I beg to say that none of our fire offices insure "a house or other building against *damage done by lightning*."

The ambiguous announcement made by some companies that "losses occasioned by lightning will be paid," certainly fosters the erroneous supposition that some offices do hold themselves liable for "damage done by lightning" where no fire supervenes; but as such is not the case, the phraseology is misleading and objectionable.

In cases where lightning has actually fired property insured, no office could evade payment, unless it had specifically negatived such liability on the face of the policy.

The Britannia Fire Association goes so far as to state that "animals killed by lightning" are "paid for, if insured;" but, in other respects, adopts the common doctrine that to constitute liability there must be actual loss by *fire*.

It is obvious, however, from the very nature of a fire insurance policy, that, without specific notification to the contrary, it is simply a contract to indemnify the insured against loss or damage by fire; therefore, unless the property insured is *actually set on fire* by the lightning, or *burnt in consequence thereof*, there is no loss within the meaning of the policy.

Many offices, however, respond to claims for reinstatement of "damage done by lightning" with a liberal hand, and, while absolutely repudiating their *legal liability*, recoup the insured in the form of a *donation* equal to his loss.

Hence it is manifest that "no compensation could be obtained under existing policies" for such casualties as those contemplated by your correspondent, "R. J." The only security, therefore, which lessees who are bound "to uphold, maintain," &c., have against such accidents is to provide a lightning conductor to their premises. Indeed, no "tall factory chimney," or other high or exposed building, should be without one. B.

LIGHTNING AT BRIXTON CHURCH.

Sir,—I see that Brixton Church was damaged last week by lightning. I have found an interesting account of damage done to it by the same means on April 24th, 1842. This account is contained in the "Proceedings of the London Electrical Society," and is headed "The Effects of a Lightning Flash on the Steeple of Brixton Church, and Observations on Lightning Conductors generally. By Charles V. Walker, esq., Hon. Sec." It is illustrated with a sketch and section.

After alluding to a lecture that Faraday had delivered some time previously on "Lightning Conductors," Mr. Walker proceeds to give a description, which I have copied in an abridged form:—

"The localities of the damage done to the exterior are shown in the sketch to be at the summit by the cross, and at the base of one of the columns near the roof of the church, distant apart upwards of 50 ft. Some idea of the violence of the explosion at these two spots may be formed by considering that the masonry on which the cross stands is nearly 10 ft. thick, and that so much of it was disturbed and with such force as to drive the cross into the position delineated,* and the column, the ball of which was shattered half through and to a height of 3 ft., was about 3 ft. in diameter. The portion of the fluid which passed within the tower did no further mischief than to fuse or else tear apart (most probably the latter) an iron wire one-tenth of an inch thick, and in passing from this to an iron clamp, to tear up the woodwork within which the clamp was concealed. The glass was broken of three windows of the room containing the clock; also of the window of a door at the foot of the steeple. The frame of the latter window presented the appearance of having been blown *outward*. So far as I have been able to determine by a careful survey, the breaking of glass did not result from the *direct* force of the flash, but from the great concussion and vibration of air consequent on the terrific explosion. The probable direction by which the lightning reached the cross is shown in the section. It is a plain cross of thick sheet copper, containing an iron rod which passed through the masonry, and was secured by a nut below. The sections of the masonry are secured together by lead poured into the parts of juncture. The fluid passed from the cross, and pursuing its path down one of these lines of lead, made its escape from the termination offering least resistance, and produced the disrupture. It then passed down the inner side of a column, and divided itself, the *greater* portion pursuing its course outside the building, but some part passing within. The latter obtained access through the metallic communication at the clock-faces, and travelled from the clock along an iron wire 30 ft. long by 1-10th in. thick, passed down this wire with comparative tranquillity (except as regards the destruction of the wire itself), and tore up the woodwork in reaching the iron clamp before mentioned."

Outside the tower the lightning was conveyed safely from the top of the belfry by an iron water-pipe; this pipe, however, terminated a few inches above the stone parapet supporting the columns, and here it appears to have traversed one side of the square tower, and shattered the base of a column on its way to a lead slope; from hence it passed safely to the ground, by means of the gutters and water-pipe.

Mr. Walker concludes his paper with suggestions for guarding against another such visitation. He says,—

"The workmen have now removed the metal cross. Let its place be supplied by one of stone. I am no architect, but presume this could readily be accomplished. But if the summit *must* be of metal, then let the cross be furnished with a few points, to draw the lightning off quietly, and let the lower end of the rod be connected with the iron water-pipe by a copper rod or plate, and let a similar connexion be made between the end of the same pipe and the lower pipe by means of another copper rod or plate. Thus will provision be made, at very small expense, against the possibility of a *disruptive* discharge."

Mr. Walker also dwells on the necessity of guarding against a "*lateral* discharge," even supposing the former precautions were taken, and says, "This simple fact should be borne in mind, that every piece of metal, every bolt, or clamp, or bar, within striking distance of the conductor, unless it be in *direct* connexion with it, is liable to cause a lateral discharge." I must confess that I feel some curiosity as to how far last week's damage resembled that of April, 1842, and also how far Mr. Walker's suggestions had been carried out. H. T. G.

* Considerably out of the perpendicular.—H. T. G.

A NEW JETTY AT CHELSEA.

THE VESTRY AND THE THAMES CONSERVATORS.

The Chelsea Vestry are anxious to erect a new jetty, but the Thames Conservators will not grant them permission to do so; at which the Vestry are indignant, more especially as, whilst the Conservators have refused them this privilege, they have just consented to allow a private individual to erect two at Cremorne. The subject was brought before the Vestry last week, when there was a warm discussion, several of the members suggesting that on any future occasion they should go direct to the Conservators' "masters," and Mr. Carter bitterly complained that the parish had been deprived of one or two landing-places, and could really not get materials up in consequence of the Embankment. It appeared that the parish was not to have a landing-place because the Thames Conservators did not choose to allow one. He hoped the matter would be made as public as possible, and he thought it was quite important enough to warrant a public meeting being called.

TRINITY CHURCH, FINCHLEY NEW ROAD.

This church was formally opened by the Bishop of London on the 9th ult. It is calculated to contain 900 persons, and can, by the construction of galleries, be made to contain nearly 1,100. The nave is 90 ft. long up to the chancel arch, and of the unusual width of 34 ft. It is lighted by a lofty clearstory, with windows of large size. The north and south aisles are 11 ft. wide, and the same length as the nave. At the western end is a large porch, with three doors, the porch being as long as the width of the nave, viz., 34 ft.; from this porch are two doors opening into the church, to lessen the usual draught from the western entrance; the two inner doors not being opposite to the three outer. There is also a north porch, and another doorway on the south side of the church, so that the egress of the whole congregation can be effected in a few minutes.

The arcade on each side the nave is supported by polished granite columns, 20 in. only in diameter, thus intercepting the view as little as possible, and the nave walls are decorated with ornamental brickwork and coloured brick bands. The capitals of the columns and responds are all carved to represent natural foliage, this being especially desired by the vicar. The style of architecture is Gothic of the Geometrical period. The chancel is not yet erected, nor are the tower and spire, but these will be proceeded with as funds permit. The chancel is intended to have a semicircular apse, and to be 36 ft. deep and 27 ft. wide, and to be brick vaulted; also to have a chancel aisle on the north side, and organ-chamber on the south, with vestry.

The architect is Mr. Henry J. Legg; and the contractors are Messrs. Dove; Mr. Austin being clerk of works.

The lord of the manor, Sir John Wilson, liberally gave the ground on which the church is built.

THE WHARFS AND WAREHOUSES STEAM-POWER PRESSURE COMPANY.

OPENING OF STREETS.

The Wharfs and Warehouses Steam-Power and Hydraulic Pressure Company have given notice of their intention, within the next few days, to break up, for the purposes of their Act, New Bridge-street, Earl-street, Upper and Lower Thames streets, and Great Tower-hill. The company's pipes, which, it appears, are at present in use in several docks in Europe, will be laid under the direction of Sir William Armstrong, the patentee. It appears that any paving works rendered necessary by the operations of the company will have to be done at the company's expense, by the Commissioners of Sewers. In the course of a discussion which took place on the subject at the last meeting of the Commissioners, it was remarked that, if the pipes could be brought into use in case of fire, they would be found to be of immense benefit.

THE NOTTINGHAM TEMPORARY HOSPITAL.

Now that the epidemic of small-pox, which fell heavily on Nottingham, is at an end, congratulations are being offered as to the means employed. A temporary hospital, on the pavilion principle, was run up by Mr. Lyman, under the direction of Mr. Tarbotton. The buildings are fifteen in all. There is under one roof the committee-room, dispensary, and surgeon's apartment; the three apartments of the matron and store-room; the kitchen, laundry, nurses' apartments, stewards' apartment, servants' dining-hall, and general store-room; the night superintendents' apartment; the isolating ward, nurses' dormitory, bath-room, and disinfecting closet; the mortuary (suddenly converted from an old greenhouse), and wards for 120 patients (male and female separately arranged), with 2,000 cubic feet of air for every bed, and each building being considerably detached from the other. The service staff of the establishment consisted of nearly sixty persons. The building part of the hospital arrangements cost about 2,500*l.*, and the establishment charges something under 5,000*l.*

The temporary institution will be finally closed with a thanksgiving service.

ROYAL ARCHÆOLOGICAL INSTITUTE.

The annual meeting of the Royal Archæological Institute of Great Britain and Ireland, was to open to-day (Thursday), at Southampton, under the patronage of her Majesty and the Prince of Wales. The Bishop of Winchester is the president of the meeting, the patrons being the Duke of Wellington, the Earl of Carnarvon, the Earl of Malmesbury, the Earl of Normanton, and Viscount Eversley. The presidents of sections are:—Antiquities, Sir Edward Smirke, A.M.; Architecture, Mr. A. J. B. Beresford-Hope, M.P.; History, Lord Henry Scott, M.P. The inaugural meeting was to be held in the Hartley Institution at noon, and an address presented by

the mayor and corporation. The afternoon would be occupied in examining the local antiquities, and the mayor was to give a *soirée* at the Hartley Institution in the evening. On Friday a meeting of sections, after which an excursion to Romsey and Porchester, with a *conversazione* at night. Saturday a long excursion to Christchurch, Beaulieu, Rufus's Stone, and Lyndhurst. On Monday, the 5th, another meeting of sections in the morning, followed by an excursion to Winchester and St. Cross, and a *conversazione* in the evening. On Tuesday an excursion to Silchester, Basingstoke, and Basing, and an evening meeting for the reading of papers. On Wednesday a meeting of sections, with an excursion to Newport and Carisbrooke, Isle of Wight, followed by a *conversazione* in the evening. On Thursday, the 8th, a last meeting of sections in the morning, with the general concluding meeting in the afternoon. Southampton and the neighbourhood are rich in historical associations and archæological remains.

THE WORCESTER GUILDHALL RESTORATION.

A public meeting, convened by the Ratepayers' Protection Society, has been held to consider the question, now before the Town Council, of rebuilding or reconstructing the Guildhall, the former at a cost of 18,000*l.*, and the latter at a cost of 9,000*l.* The attendance at the outset was somewhere about a hundred, according to our authority the local *Chronicle*, but it increased to double that number. Most of those present seemed to be working men of the mechanic class.

It was unanimously resolved:—

"That the proposal of the Town Council to rebuild or reconstruct the ancient Guildhall of this city is altogether unnecessary, and would entail upon the already heavily-taxed ratepayers an additional financial burden which is uncalled for. This meeting is therefore of opinion that the project ought to be at once abandoned, and steps taken for putting the fabric into a state of necessary repair."

"That a memorial to the town council be signed by the chairman on behalf of this meeting, and that Mr. Councillor Airey be desired to present the same, and to move such a resolution thereon as may appear necessary in accordance with the memorial."

The memorial urged the views of the meeting. It stated that the—

"Memorialists believe that, with necessary repairs, the present building is sufficient for all the ordinary uses of a town-hall, and would answer such purpose for many years to come; and especially would they regret to see the ancient front destroyed, being of opinion that it is an ornament to the city."

The memorialists, therefore, respectfully begged the town council to abandon for the present the contemplated rebuilding or reconstruction of the guildhall.

CUT NAIL WORKS AT MIDDLESBROUGH.

Messrs. Jones, Brothers, & Co., of the Ayrton Rolling Mills, have inaugurated a new branch of industry in Middlesbrough. On about an acre of ground adjoining their mills they have erected thirty nail-cutting machines, three shears for cross-cutting, a number of grindstones, lathes, and drilling-machines, requisite for making tools and keeping them in order. The cut nail trade is a special branch of a number of trades included in the term nailmaking. The nails are made out of sheets or strips of Cleveland iron, and the thickness of the sheet varies according to the length of the nail required. The sheets are cut into strips transversely, the width of the strip being identical with the length of the nail. A youth "feeds" the machine with strip, which is seized by a "clamm," and turned over at each cut, the nails being produced at the rate of from two to three per second. The machines are constructed by the firm of Messrs. J. Rice & Co., of Birmingham, and embrace the latest improvements in nail-cutting machines. The machines are driven by a horizontal engine, the steam power being derived from two horizontal boilers, which are fixed outside of the building. Foundations are put in for another engine, to be coupled to the one already erected, when additional machines are laid down. Provision is also made for the erection of half a dozen "washer" machines. The sheets from which the nails are made are manufactured in the adjoining mill belonging to the firm, and an interesting system of three high sheet rolling has been introduced for the purpose of turning out those sheets more rapidly, and with a better surface than is done by the old process. Generally, cut nails are made in Birmingham, Leeds, Manchester, and Gateshead. At present, the price of cut nails, from 3 in. to 6 in., is 22*l.* per ton. There is no place in the United Kingdom where cut nails can be manufactured cheaper than at Middlesbrough. The town is also favourably situated for the London and Scotch markets. The works are producing rose, clasp, and clout nails, joiner's sprigs, ceiling brads, floor brads, lath nails, colliery plate nails, and any other class of cut nail not less than 1 in. in length. The machinery is capable of making about forty tons per week, but the works are laid out for ultimately turning out about 100 tons of cut nails per week. The building is erected with the view of giving as much light as possible to the interior, and for this purpose a good portion of the roof is constructed of glass.

ST. EDWARD'S SCHOOL, OXFORD.

The foundation stone of new premises for this school has been laid at Summertown, their present premises in New Inn Hall-street being too small. A large and open space, covering five acres of ground, and situate at the corner of Woodstock-road and South Parade, Summertown, has been provided for the new buildings, and it is intended that they shall cover about one acre and a half, the remaining three acres and a half being devoted to cricket and playgrounds, and carriage-drive approaches, and there will also be a considerable portion of ground set aside for ornamental planting. Mr. W. Wilkinson, of Oxford, is the architect; and the contract for the work has been taken by Messrs. T. Orchard, Brothers, of Banbury, for 8,659*l.*, but this does not include the chapel, which it is proposed to erect close to and in connexion with the schools. The cost, it is understood, will be principally borne by the Rev. Algernon B. Simeon, and the works during their progress will be in the main charge of Mr. J. Hards, the foreman of the contractor. It was an instruction to the architect, we believe, to produce a plan for the building of a simple nature, and suitable for academical purposes. The soil is a marly one, and the site is free from surroundings of crowded buildings. The architecture will bear Early English characteristics, and will be ornate, but not pretentious in appearance. The main front will face the south towards Oxford, while the master's residence, which will be separate, although in communication with the main building, will be situated at the south-west corner. At the same end will be the school and class-rooms, and eventually it is proposed to continue a cloister to the projected chapel. The south frontage will extend nearly 200 ft., the west or kitchen front about 112 ft., and the building will comprise three stories, this being necessitated in consequence of the height of the large school-room and refectory, both of which are intended to be 60 ft. by 24 ft., with a height of 17 ft. The building will be of brick, with dressings of Bath stone, and all the windows will be provided with iron casements. The library and masters' rooms will be spacious. A main stone staircase will lead to the dormitories on the second and third floors, where accommodation will be provided on the "cubical" system—which means really a separate division for each boy, with a small window,—for 100 boys, the number on each floor being equally divided. There are in addition designs for private bath-rooms, and one larger one for the use of the smaller boys. In case of any infectious disease making its appearance, complete isolation will be secured by the sufferers being transferred to the gardener's cottage, where accommodation will be provided somewhat after the fashion of cottage hospitals.

CONCRETE WALLS AND ENCAUSTIC TILING.

Sir,—I have been very much struck with the suggestions of more than one of your correspondents of late as to the uses of encaustic tiling. That it would set at rest all questions as to repainting, repointing, and cleansing of stone, is evident, and would possess, what is so important in our climate, a power of being restored to pristine brightness and freshness with the minimum of labour, are advantages which cannot be overlooked by those who build, and by tenants. To architects it offers, by its capability of thorough and extensive use in an artistic and uniformly architectural character, an opportunity for the display of genius in a new direction, which might open out a way from the perpetual charges against all our architecture that it is stale, and nothing but the working-up of old types of art.

But my object in writing this is chiefly to suggest that, if ever concrete becomes largely employed in building, which seems very likely, the facing it in an architectural manner with encaustic tiling, suitably studied and worked out in colour and pattern in unison with the whole design, would be a natural and excellent combination; and there seems no reason to fear that there is any technical objection to the combination of the two materials, *i. e.*, concrete, with an encaustic tile facing. Its partial use, as at present employed, while giving a pleasing variety, does not come up to what we mean, which, we reiterate, is the making it the sole vehicle of exterior decoration, in a well-studied and artistic manner as to colour and pattern, in harmony with the design and uses of the building; and as solving the many problems which now afflict the profession.

Beta.

THE DRINKING FOUNTAIN ON CLIFTON DOWNS, BRISTOL.

On the completion of this drinking-fountain we printed a few particulars of its origin and construction, and we now give a view of it, repeating so much of the account as may render looking back unnecessary. It was erected at the cost of Mr. Alderman Proctor (late high sheriff of the county), and presented to the people of Bristol for ever. His motive for this liberal act may be learnt from the inscription cut in a panel at the base, and which runs thus:—

"Erected by a citizen of Bristol to record the liberal gift of certain rights over Clifton Down made to the citizens by the Society of Merchant Venturers, under the provisions of the Clifton and Durdham Downs Acts of Parliament, 1861, whereby the enjoyment of these Downs is preserved to the citizens of Bristol for ever."

The fountain stands on the site of the old turnpike, and is approached by four roads, as well as by a pathway from the new zig-zag walk up the cliff. The structure has the novelty of being triangular on plan. The stone used is the Box ground, with alternate voussoirs to the arches of red Mansfield; the three arches spring from columns, the shafts of which are of Rouge Royal marble polished; the basin is of red Mansfield, with a veined marble curb. Inside the basin stands what may be termed the fountain proper, from which the taps project; this takes the form of the structure, and there is a tap in front of each arch. The under side of the superstructure is groined. Over the arches are gables, with coping and carving under it, and they have each a carved finial. At the three angles there are buttresses, terminating with gablets detached from the pyramidal roof which rises from the centre, and is topped by a handsome finial. In the gablets over the three arched openings are circular sunk panels containing the arms of the Merchant Venturers, the arms of the city of Bristol, and those of the donor, Mr. Alderman Proctor, carved in red Mansfield stone, with their several mottoes.

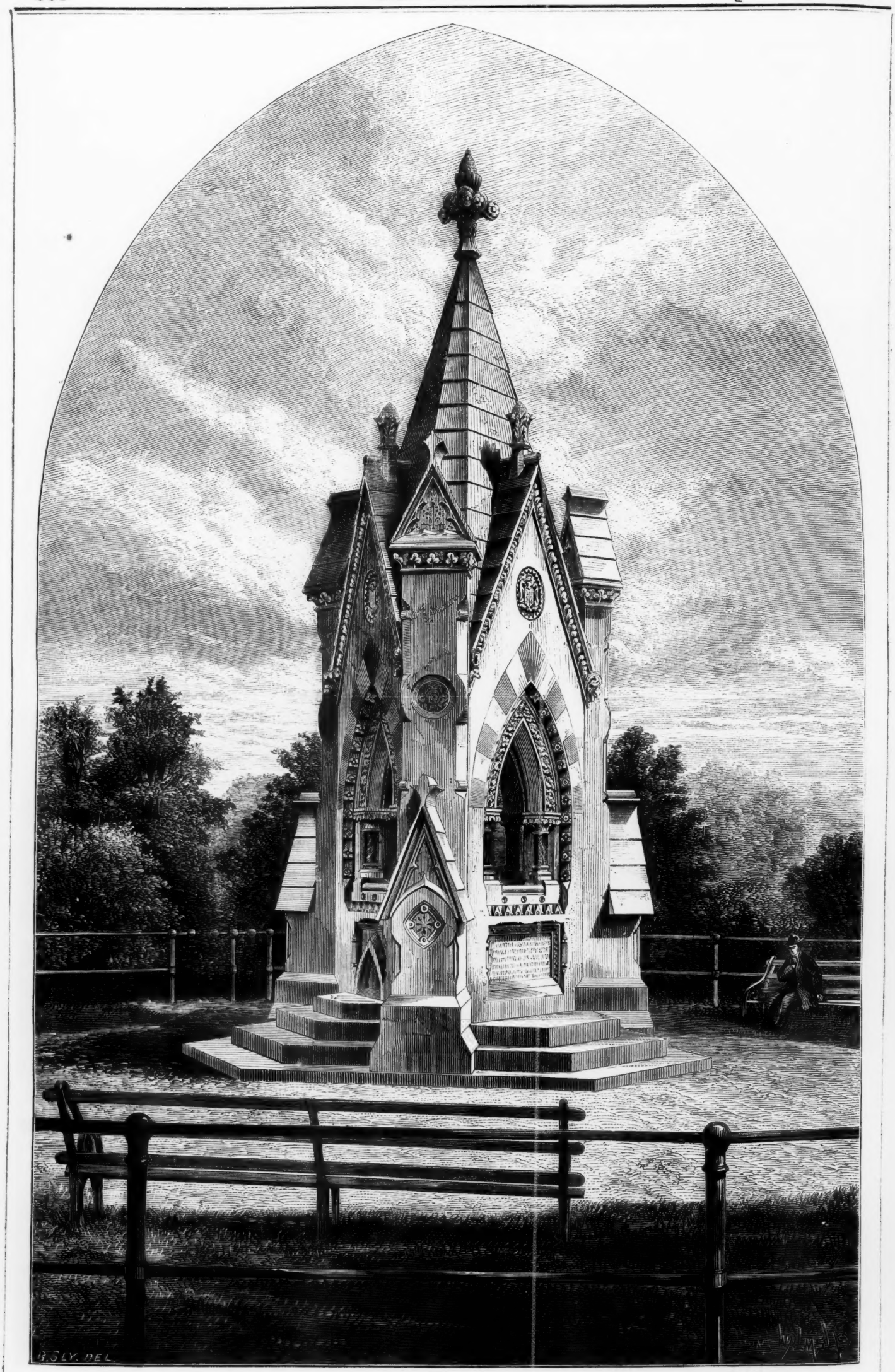
The structure stands on three Pennant-stone steps: on one side is a fourth, for the accommodation of children: a similar step will have to be added at the other openings. The whole erection is 25 ft. 6 in. high, to the top of the carved finial. In connexion with the fountain there is a cattle-trough, not far off, which is continually supplied with water.

The work has been carried out from the designs of Messrs. George & Henry Godwin, of London, architects, by Messrs. Broad & Tucker, of Bristol.

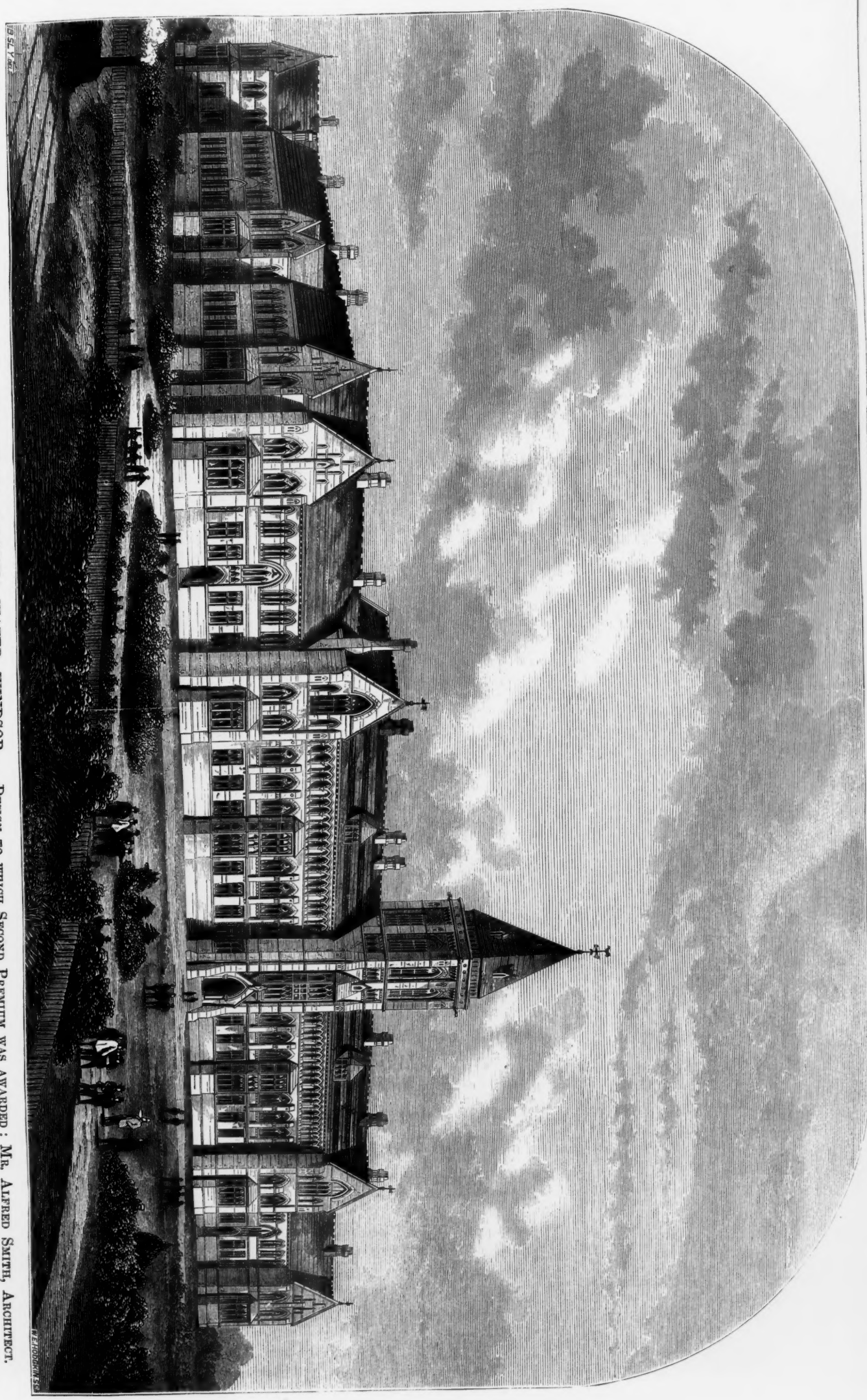
The donor writes as follows:—

"I am much pleased to find that the drinking-fountain is greatly appreciated by all classes. We find a great advantage in having the supply of water direct from the main, as it drinks cool and fresh. We are also enabled to satisfy any extra demand that arises from the visit of excursionists, the increased number of persons that walk on the downs when the band is playing, or the thousands who avail themselves of the advantage of the downs on the Sunday afternoon and evening.

Ordinarily, the three cups attached to the fountain are sufficient; but to meet any extra demand, my man takes out a number of half-pint mugs, and turns on an extra supply of water, according as it may be required. The Bristol Water Works Company supply the water by metre, at a charge of 1s. per thousand gallons."



DRINKING FOUNTAIN ON CLIFTON DOWNS, PRESENTED TO THE CITIZENS OF BRISTOL BY MR. ALDERMAN PROCTOR.——Messrs. George & Henry Godwin, Architects.



PROPOSED LUNATIC ASYLUM AT ST. ANN'S HEATH, VIRGINIA WATER, WINDSOR.—DESIGN TO WHICH SECOND PREMIUM WAS AWARDED: MR. ALFRED SMITH, ARCHITECT.

PROPOSED LUNATIC ASYLUM, ST. ANN'S HEATH, VIRGINIA WATER.

The report of the referees on the thirteen designs submitted to Mr. Holloway, was printed in our last. By this the first premium was awarded to the drawings marked "Alpha" (by Messrs. Crossland, Salomons, & Jones); the second to the set marked "*Improbus labor omina vincit*," submitted by Mr. Alfred Smith. In our present issue we publish a view, illustrating Mr. Smith's design. It is right we should say, however, that in doing this, no reflection whatever on the referee's decision is intended: it is the result of a published misstatement, which gave the first place to the design we have engraved; and we know nothing of the other designs. We propose in an early number to illustrate fully the design by Messrs. Crossland, Salomons, & Jones, to which the first premium is really awarded.

Readers of the *Builder* will not require to be told that the plan of an institution such as this is the most important part of the design: at present it is not before us. With reference to the elevations, we quote Mr. Smith's own particulars:—

"I have endeavoured," he writes, "to make every part of the building graceful and of good proportion, and in perfect harmony and keeping throughout, so that the *tout ensemble* shall be at once simple, dignified, and imposing, and derive all it effects from the well-studied arrangement and proportion of the necessary parts, and not from anything meretricious. Very little stone need be used, as it will be desirable, both for the general effect of the building as well as on the grounds of economy, to give it a thoroughly brick expression, using terra-cotta or Ransome's patent stone for the portions which cannot be executed in brick, and to avoid the too common, unsatisfactory, and costly error of fitting stone and brick together in such a way that it is hard to decide whether it is intended to be a brick or stone building. Under any circumstances, the repetition of good forms is an advantage as regards cost, whether stone is used or not. Very little ornament or carving has been introduced, because good carving is very expensive, and buildings of this nature ought not to depend upon this for success, and a few touches here and there from a master-hand is all that should be necessary to make them thoroughly effective."

We understand that all the designs will shortly be exhibited at the House in Conduit-street.*

WAGES.

Sir,—I did not expect that my former communication on this subject would please every one, and I see an unsparing criticism this week signed "S." (By the way, to select that sibilant consonant as a signature was a most happy idea. It is seldom that the whole essence of a letter is contained in the signature.) I do not find, indeed, that your correspondent has a good word for a single sentence of my letter, unless to follow it with a fatal "but," and it is perhaps only reasonable to infer that the parts passed over in silence have equally failed to secure his approbation. Of convincing so decided an opponent I have, of course, no hope. I will not abuse your indulgence, therefore, by replying to all his criticisms. Most of these I am content to leave to the judgment of your readers, provided only that they will suspend their opinion until they have glanced again at what I did actually write. It may be well, however, to notice so much of your correspondent's letter as will suffice to explain and briefly re-assert my position; namely, this, that in determining what is a proper rate of wages the question is simply a question of value. The labourer sells something which the employer buys, and the wage which the former receives is the supposed value of this. And in settling what that value is (in other words, the *price*) economical considerations shou'd alone be introduced. "Abstract justice," I contend, has no more to do with the value of labour than with the value of wheat. In the former case the conditions are more complicated, but the principles on which both must be decided are fundamentally the same. You cannot expect the labourer to be content unless he is conscious of obtaining the full value of his work; and, if he were instructed in economic science, his "enlightened self-interest" would not only prompt him to insist on this, but would remind him that it is suicidal to exact more than this when he has for a time the power.

I therefore regard the notion of "abstract justice" here as simply misleading. The very term, I confess, in this connexion grates on my ears. It conveys an idea of dreaminess and sentimentality, and seems to me to stand self-condemned. I observe that "S.," though writing specially to censure me for wishing to exclude this notion, makes no attempt to show how it may be introduced with advantage. I believe it absolutely incapable of application. I would here remark that "self-interest" as a motive is often looked upon with unjustifiable disfavour. It is a very different thing from individual selfishness, and when actuating a class numbering perhaps many thousands, it is not incompatible with a great deal of *esprit de corps* and not a little chivalry. In the present strike, for example, there are no doubt many men who, for the sake, as they think, of the general benefit, willingly suffer losses for which they well know complete success would not compensate them.

I do not wish to be understood to assert that moral considerations should not govern the relations between masters and men. Only too glad should I be to see more employers whose object of existence is not simply to amass large fortunes as rapidly as possible, and on the part of workmen a little more of that pride and sense of honour which would prompt them to give good work for good wages. I do not think this inconsistent with my other opinions.

"S." is very severe on my simple illustration of the old maxim that "honesty is the best policy." After carefully reading the passage again, I can candidly affirm that I consider it quite incapable of the construction he puts upon it. I am almost forced to think he never heard the term "enlightened self-interest" before. Indeed, when "S." found himself involved in the curious assumption that "abstract justice" and "enlightened self-interest" are different terms for the same idea, he might have suspected he had somehow got wrong. This is surely logic in its swaddling clothes. Not many of your readers will follow "S.'s" example. I think, indeed, if our friend had not accidentally misquoted the passage he gives, and lost sight of the next three sentences, he would not himself have fallen into the error.

"S." does not see the relevancy of my remark that matters will not be improved by "preaching sickening sermons on universal benevolence." That I regret; but it is not for me to decide on the relevancy of my own remarks. The "universal benevolence" I alluded to, and which we are sometimes exhorted in the public prints to practise, is usually a kind of magnanimous self-denial by each party for the sake of the other. A very easy doctrine, indeed, to recommend to others; but to set each party watching to see if the other is acting on this golden rule (for this is what it amounts to) is not a likely way to abolish the "class hatreds," as "S." calls them, which we all deprecate. If "S." has not seen any of these "sermons" he is to be congratulated.

I have little sympathy with the benevolence whose object is solely to raise the status of those who are now called the lower classes, "by assisting some of them to rise." The qualities of the workmen who "rise" above their fellows are seldom those of the highest order, as is shown by the absence of sympathy they usually display towards the comrades they have left behind. Besides which, such benevolence will at the best benefit only an infinitesimally small proportion of the multitude. A wise philanthropy will rather try to benefit the workmen *in* their class than to raise one or two of them out of it, and this by teaching them how to improve permanently their *general* condition for themselves, both in material and moral respects. As Mr. Mill has well written on a kindred subject,—

"There is reason to rejoice at whatever makes the privileged classes of skilled artizans feel that they have the same interests, and depend for their remuneration on the same general causes, and must resort for the improvement of their condition to the same remedies as the less fortunately circumstanced and comparatively helpless multitude."

Those who will put into the workmen's hands the power which comes with knowledge, and teach them to understand the laws which govern the production and distribution of wealth, will earn their lasting gratitude, though they must expect to be regarded as visionaries for a time. Your correspondent's sneer at "those economic laws which are said to be so infallible," is amusing enough, and reminds one of the gentleman Sydney Smith knew, "who used to speak disrespectfully of the equator!" And if they "oppress," as he says, not only "those who cannot rise into the tide," whatever that may mean, but also those who are not "*within the compass of their action*;" they must be remarkable laws indeed, and no wonder "S." does not like them. I am, of course, unable to say whether their doctrine will or "will not be 'preached' too much," but they must be preached a little more clearly if they are to be understood.

I dislike the present system of the complete dissociation of capital and labour as heartily as any one, and principally for the reason that under it we have two sets of interests *necessarily* hostile. So long as the labourers and the capitalists are distinct sets of men this will be the case. And it is because, in the present dispute, there are no signs of any change of system, that I fear, "whatever agreement may now be come to can be of no value towards a real settlement." The workmen will get most, perhaps, of what they now ask, grudgingly granted by their masters; the present mutual ignorance and blind distrust will continue; and in a few years the same fight will occur again. When workmen have acquired sufficient knowledge and public spirit to co-operate intelligently, so as to be able to do without the individual capitalist, then, and not before, trade wars will cease, for the cause of them will have passed away.

It is not to be concealed that workmen have still much to learn before that time can arrive. They are not without instructors. They have the teachers of Christian forbearance and abstract justice on the one hand, and on the other the positivists, who recommend combination,—not to render warfare unnecessary, but to make one of the belligerents stronger for it. When the sentimental and the heroic teachers have both had their say, the scientific view may, perhaps, obtain serious attention.

Mr. Tarbuck, I fear, will find that we are far too "practical" a people to place faith in any one who proceeds on principles. Nor is there any reason to suppose that the masters would place Mr. Mill in possession of sufficiently full information as to their profits, &c., to enable him to form a judgment.

I must apologise for the length of this letter; but I shall not trouble you with any further remarks on this subject. H.

BITS OF BROMPTON.

Mr. T. F. Dillon Croker, following up a pleasant work of his father's, is contributing to the *South London Press* some "South-Western Sketches," which will be read by many with interest by-and-by, as well as now. We reprint a few paragraphs from a chapter headed "The Oratory to Stamford Bridge":—

"A wag once observed to us that he did not know why so many actors lived at Brompton unless because it was the *Hamlet* that gave advice to the players. The street which divides Pelham-place from Thurloe-square is Pelham-street, the right side of which is now all down to make room for the railway, and which street takes us immediately up on the left to the South Kensington station of the Metropolitan, where formerly stood Pelham Villas. This station was opened in the Christmas week of 1868. Of the railway we are happily, on the present occasion, independent, since its convenience is its sole recommendation, and the means of transit can hardly be said to compensate for numerous annoyances and high fares. In the underground railway carriages, every one quietly submits to sit in a thorough draught, which would be immediately resented in an omnibus. This is one of its dangers; but there are others resulting from the general bustling and excitement, stopping in tunnels, chances of fire, &c., which appear to be quite as likely to occur as on other lines. No, let us keep above ground as long as we can, and when we cannot, there is the Brompton Cemetery (of which we shall have a word *to* say by-and-by) always open to us. This by the way. It was at the South Kensington station that the serious collision took place, in consequence of which that clever actress, Miss Bufton, obtained a verdict of 1,600*l.* damages, to which the railway company demurred as excessive, although they owned themselves entirely in fault; and 1,600*l.* is poor compensation for the possible wreck of an entire future.

Opposite to this station at the corner of Cromwell-lane still stands Brompton Hall, said to have been the residence of Lord Burleigh, and visited by Queen Elizabeth on the occasion of her proceeding to Queen's Elm. A stone eagle yet remains perched above the wall in solitary state, where once was the old gateway, which is now, alas! disfigured by an ugly hoarding. No. 7, Cromwell-place, is the residence of Mr. J. E.

* The following are the competitors who are to receive under the award 50*l.* each:—Messrs. T. R. Smith, R. P. Spiers, Seddon, E. W. Godwin, Quilter, T. H. Watson, and Francis.

Millais, R.A. It is one of a fine row of houses leading into Cromwell-road. In Cromwell-lane are some quaint almshouses about 230 years old, built by Mr. Methwold, who lived in Hale House (afterwards Cromwell House). The inmates of these houses (one of whom is upwards of ninety years old, and has been there twenty-three years), seemed cheered by an occasional visitor, more especially if also a sympathetic inquirer; but they appear to be very carelessly treated, as the rooms are terribly out of repair. Sixteen acres of land, it would appear, were left to keep these old houses in perpetuity. This, like many another trust, owing to negligence, not to use a harsher term, on the part of those on whom the responsibility devolved, has been lost to those for whose advantage it was intended, and has, we believe, in some curious manner, merged into a portion of the South Kensington estate. It may be suggested to the inhabitants of the neighbourhood, and the charitable generally, that a trifling amount would restore the houses to at least comparative comfort.

There used to be a square old wooden pump in the front garden not very long ago, and we remember constantly passing the houses when they were in a narrow lane: now they are almost the sole remnants hereabouts of a bygone age; and we understand that they are purchased by the railway company, so that the chances are they will come down in these days of progress and desecration, unless some zealous archæologist should interfere."

THE ASSESSMENT OF ST. THOMAS'S HOSPITAL.

The proceedings at the general assessment sessions at Westminster last week on the appeal of the governors of St. Thomas's Hospital against the assessment made by the parish of Lambeth on the new structure, contain several features of interest as to the value and rateability of public buildings. The parish had rated the hospital at 20,722*l.* gross, and 17,580*l.* rateable value, whereas the hospital authorities contended that the extreme rateable value was 5,000*l.*; but the magistrates last week decided that the rateable value was 10,900*l.*, which, although that sum is nearly 7,000*l.* less than the amount claimed by the parish, is, nevertheless, more than double the sum at which the hospital authorities contended the building ought to have been rated. The matter is not, however, yet settled, inasmuch as a case was granted, on an application by the counsel for the hospital, involving a point of law as to the liability of the hospital to be rated at all. A feeling of dissatisfaction seems to prevail at the decision arrived at by the magistrates, as it involves an annual contribution from the income of the charity of a sum approaching 3,000*l.* towards the rates of the parish of Lambeth, and it is urged that it is not just that a charity freely relieving and treating the sick and injured poor of a parish should be subject to such an impost.

The opposite views of the several valuers and others connected with building as to the annual value of the hospital was somewhat striking. Mr. E. Ryde, on behalf of the hospital authorities, stated that he had had great experience in London as a valuer, and the result of his valuation was that the gross value of the hospital should be 6,000*l.*, and taking off one-sixth, the result would be 5,000*l.* as the rateable value. Mr. Currey, the architect of the hospital, also believed that 5,000*l.* was the fair rateable value; and Mr. Clifton corroborated the two first-named gentlemen. On the other hand, Mr. C. Lee, who appeared on behalf of the parish of Lambeth, said for the building he allowed 360,000*l.*, and 90,000*l.* for the land. That sum was less than the cost, for he had left out the decorations. It was worth 9d. per cubic foot, but he had calculated it upon 8d., or 450,000*l.* at 3½ per cent., making the gross value 19,350*l.*, and the net 15,750*l.* Mr. Castle stated that the principle upon which the parish of Lambeth had assessed the hospital was a fair one, namely, its structural value. He put down the land at 90,000*l.*, and the foundations at 48,000*l.*, making 138,000*l.*, and upon that he allowed 4 per cent., giving 5,520*l.* net. He estimated the buildings at 354,153*l.*, and allowed 5 per cent. on them, making 17,770*l.*, which altogether amounted to 23,227*l.* net. Adding one-fifth to that, the gross value would be 27,872*l.* Mr. Marsh Nelson fully agreed with Mr. Castle's principle, but he thought a fair basis would be 24,000*l.* gross, and 20,000*l.* net. Mr. Vigers gave similar testimony. He had surveyed the premises, and put down the land at 90,000*l.* and the foundations at 48,000*l.*, making 138,000*l.*; and the buildings he valued at 8d. per foot.

MORE THUNDERSTORMS.

A repetition — almost a continuation—of thunderstorms has been going on throughout the country since the date of our last notice. On Thursday night in last week the metropolitan display of silent lightning was curious; it seemed to be beyond a range of clouds in the north-east, and ten or a dozen times a minute lighted up the dark outlines of these with its gleams, attended occasionally with zig-zag displays, but otherwise liker the aurora borealis than ordinary lightning. Double storms appear to have been frequent, the second recurring after a longer or shorter interval, as if the storms were circular, and returned upon their own track; and indeed they were accompanied in certain cases by a whirlwind, or a water-spout. The rain descended in deluges in many districts. A fearful storm burst over Hampshire on Thursday morning. Emsworth Station, on the London and Brighton Railway, was struck by the lightning, and speedily destroyed. The streets of Portsmouth were flooded. During a most violent storm at Burnley, Trinity Church was struck and the flag-staff was shattered to pieces. Berwick lighthouse has been struck, but the masonry is believed to be uninjured. Many persons, houses, cattle, &c., have, as before, been struck, but fewer persons killed than heretofore. One gentleman was killed in bed, and his brain was found to be dissolved into an oily substance. The heat or other oppressive influence of the atmosphere has also caused some deaths. In New York these continue; and a cooler sunshine does not seem to have caused the deaths to cease, or the lassitude and oppression of spirits to diminish.

COTTAGE DESIGNS: ROYAL AGRICULTURAL SOCIETY.

I am told fifty-two designs for cottages were sent to the meeting of the Royal Agricultural Society held this year at Cardiff, but not one was found of sufficient merit to receive the seal of the Royal Society. How is this? Are architects too honest for them, and have not indulged in sufficient ornament to suit the judges? But surely out of fifty-two designs there must have been one found possessing a well-distributed plan.

Is it possible, sir, for an architect to send in competition an honest æsthetic design for a pair of cottages, containing each five rooms, with offices, for the sum of 220*l.*? H. F. T. C.

SCHOOL BOARD FOR LONDON.

The Board have selected a design by Mr. Frederick Roper, for their schools to be erected in Great Hunter-street, Southwark. Accommodation, 320 boys, 320 girls, and 400 infants. The estimated total cost is 7,600*l.*

THE BUILDERS' STRIKE.

On Wednesday afternoon deputations from the carpenters, bricklayers, plasterers, painters, metal-workers, and labourers waited upon the sub-committee of the Master Builders' Association, with the object, if possible, of effecting a settlement of the existing dispute. The carpenters' deputation, which attended as an independent body, were first admitted to an interview, and on being asked by the chairman of the committee, Mr. Hannen, under what instructions they acted, Mr. Sadler, a member of the deputation, handed in the following resolution, adopted at a meeting of the carpenters' delegates on the previous evening:—

"That we instruct our deputation about to wait upon the masters' committee to offer the following terms,—viz.: fifty-one hours per week, to be worked regularly throughout the year, in shops and on jobs, at the wage of 8½d. per hour, up to the 1st of March, 1873, with a guarantee that on and after that date an increase of ½d. per hour be given; also, that a code of working rules be arbitrated upon, the men not to resume work until such code is finally agreed upon."

Mr. Sadler added that himself and colleague were prepared to make a settlement upon the above terms.

Mr. Hannen said his committee had been invested with full powers to settle the dispute upon any terms they thought fit, and they could not treat with any deputation not possessing the same powers.

It appeared that the carpenters had bound their deputation not to go outside a hard and fast line, and therefore it was of no use to prolong the interview. After a few remarks, the deputation retired.

The other deputations from the trades belonging to the amalgamated committee were then introduced, and stated they came to discuss a re-arrangement of the hours as accepted by the masons, and the necessity of a code of working rules.

The Chairman said it appeared to him that none of the deputations had come with full powers to settle, and therefore it was useless to prolong the interview. The hours must form the basis of any code of working rules, and as the different trades could not agree upon the hours it was useless to go into that question. The masters were prepared to consider a code of rules to regulate overtime, but they could not recognise any rule for the abolition of piecework.

The deputation then retired, without having come to an agreement upon any single point.

BEECH.

Sir,—If "W." will try the experiment of filling up the ends of fresh-sawn beech with soft soap, and placing the beech crossways to season, he will find it to his advantage. I have seen beech so treated for the manufacture of joiners' bench planes. W. W.

THE IRONWORK AT BRADFORD COVERED MARKET.

Sir,—I have taken great interest in your description of the new covered market in Bradford (see p. 562), and wish you would add the names of the contractors for the ironwork. Having been myself connected with the firm, I beg to state that the late Messrs. Ratcliffe & Nuscheler (now Mr. A. Nuscheler, Hexthorpe Ironworks, Doncaster) have been the contractors for the ironwork. I can further state that the weight of plain castings has been about 360 tons, the ornamental castings about 40 tons, and the wrought-iron in the dome and roof principals about 13 tons. A special feature in this market is the elaborate half-circular windows in the openings, formed of cast-iron framing, and ornamented with cast-iron scrollwork of flowers.

H. Nabholz.

PORTLAND CEMENT STAIRS.

Sir,—If your correspondent, Mr. Britton, or other of your readers interested, will take the trouble to look into the wharf of Messrs. Bazley White, Brothers, cement manufacturers, of Millbank-street, Westminster, they will there see a flight of steps up to their offices, done by me eight years ago, and which has stood the wear and tear daily of a large number of carmen's hob-nailed boots during that time, and are at present in as good a state of preservation as on the day when done, thus proving to ocular demonstration that Portland cement, well handled, is an excellent material for that purpose.

William Pulham.

STOCKTON EXCHANGE COMPANY (LIMITED), COMPETITION.

Sir,—In this, as in kindred instances, it will probably be found that the promoters have erred from ignorance rather than intentionally. The conference committee on competitions will not meet again until after the holidays; and I, as hon. sec. of that committee, have *as yet* no authority for remonstrating *ex officio* with the authors of unfair conditions. In the meantime, the "General Regulations for the Conduct of Architectural Competitions" are now in the press, and will shortly be issued; and architects having the good of the profession at heart will do well to provide themselves with copies and send them for the guidance of such committees, directors, and private promoters as they know are about to invite competition.

With regard to the Stockton Exchange competition, on seeing the letter on this subject in last week's *Builder*, I immediately wrote for the

particulars, but received the laconic answer, "List of competitors closed." Judging, however, from the conditions as advertised, your correspondent appears to have abundant grounds for signing himself "Indignans." The particulars say nothing about a professional assessor; the number and scale of the drawings are not stated; employment is not promised to the author of the best design; the aggregate amount of the premiums is only 85*l.* instead of 1½ per cent. on the proposed outlay; and finally we are told that the premium will merge in the commission. Unless these conditions are modified, I would paraphrase *Punch's* celebrated advice by saying, "*To those about to compete*—DON'T."

ALFRED STRONG.

TO THIRSTY FOLKS.

MANY a weary and thirsty person could often get a good drink of water, if he would carry about with him, especially when he goes into the country, a short length of thin India-rubber tubing. By putting one end into the water, and the other into his mouth, he may frequently get a draught of pure and clear water from very small springs and pools, where it would be impossible to get it in any other way.

J. R. EDMONDS.

WASTEFUL FIRING.

SIR,—Will you allow me to ask some of your readers in the cooking-stove line, if it would not be possible to retain and utilise the large amount of gas usually allowed to go up the chimney? I confess that I do not understand all the process of gas-making, but it strikes me that the coal burned in an ordinary kitchener ought to light the house; and if any one would produce a stove to accomplish that end, I should think his fortune would be made.

FOR WHAT IT IS WORTH.

TREATMENT OF BUILDERS.

SIR,—On the 18th of June invitations were issued to five different builders in Hull and elsewhere to inspect the plans, &c., for the proposed alterations and restoration of one of the old castles in the East Riding of Yorkshire, prepared by a firm of Hull architects, with a note appended stating that the tenders must be delivered on Friday, the 28th, at noon; and, in complying, all the tenders (one excepted) were delivered on the Friday, and, as a matter of course, the lowest was recommended to the proprietor for acceptance, and was actually accepted on the Saturday, when, strange to say, the tender referred to (by a Scarboro' builder) was forwarded on the Saturday, at 4 p.m., thus twenty-seven hours behind the specified time, which, when opened, was found to be upwards of 1,400*l.* below the lowest delivered at the appointed time, and was, consequently, accepted. Will any of your correspondents say if this is the right way for architects to treat builders, after spending so much valuable time in taking out and pricing quantities?

A LOVER OF STRAIGHT DEALING.

THE REPAIR OF PAVEMENT OVER CELLARS.

THE VESTRY OF ST. GEORGE'S, HANOVER-SQUARE, *v.* COL. R. W. HAMILTON.

MR. POLAND (for the Vestry) explained, in opening the case, to the magistrate (Mr. Arnold), at the Westminster Police Court, that he was instructed to take out a summons against Col. Hamilton for the recovery of 8*l.* 13s. 4d., being for repairs executed by the parish in making good the pavement at 108, Eaton-square. He rested upon the 18th & 19th Vict., cap. 120, sec. 102, which said that all vaults, arches, and cellars were to be kept in proper order and repair by the owner or occupier of the house. The pavement in question was really the roof of the cellar, resting on its walls. When originally put down, the pavement was 5 in. thick, but it had now worn to 2½ in. The parish had repaired the landing, and called upon Col. Hamilton to pay the expense; but he repudiated all liability, and hence the present proceedings. He (Mr. Poland) contended, however, that the defendant was liable, under the 2nd & 3rd Vict., c. 47, sec. 60, to repair this pavement, which was, in reality, the roof of the vault.

The Magistrate asked who put down the pavement in the first instance,—was it the builder?

Mr. Poland said yes. The public had a right of way over the pavement, and Col. Hamilton, he submitted, was bound to keep his cellar-roof in order. The parish were not bound to put down flagstones 11 ft. long to re-cover the roof of the vault, for as the rule the flagstones they put down as pavement were much smaller. The vestry were anxious for a decision, as this case would govern a great many others, and involved very considerable expense.

Mr. Turner (for Col. Hamilton) supposed his learned friend and he did not dispute the facts, but the inferences to be drawn therefrom. If the decision was adverse, he should ask for a case for a superior court. He wished to say, that Col. Hamilton's lease was granted in 1829; that the Act on which Mr. Poland relied was passed in 1855, and no steps had been taken till the present time. His learned friend had said the pavement was the roof of the vault. True, the under-surface was, but the roof of the cellar was also the pavement of Eaton-square. If it was not, then Eaton-square had no pavement. He submitted that this pavement was not a "covering" within the meaning of Michael Angelo Taylor's Act (57 Geo. III., cap. 29), sec. 70; and moreover by 7 Geo. IV., cap. 25, sec. 58, this pavement was vested in the trustees of Lord Westminster's property, and by the 18th & 19th Vict., cap. 120, sec. 98, their powers and liabilities were transferred to the vestry of St. George's; so that the parish was clearly bound to repair this pavement. Besides, there was already a decision of Chief Justice Earle (Robins *v.* Jones, 13 C.B. N.S., p. 221), where an action was brought against the owner of a pavement, to recover damages in consequence of an accident through the pavement falling in. It appeared that the pavement was in front of a house, on the Surrey side of Waterloo Bridge, and a crowd having assembled, through a distress being put into the house, the pavement gave way, several persons were injured, and one was killed. The judge ruled that the plaintiff must be non-suited, and gave judgment for the defendant. He (Mr. Turner) contended that as the pavement in front of Col. Hamilton's house was worn out by public traffic, the vestry were bound to repair it.

After some further remarks on both sides it was agreed that Mr. Poland should draw up a case for a superior court.

RE-ARRANGEMENT OF THE METROPOLITAN BOARD-ROOM.

SIR,—The public are largely interested in this matter; the question being, shall the public enjoy as much facility as they have hitherto enjoyed in hearing the debates of the Metropolitan Board of Works?

Several classes of persons need accommodation in the public meeting-room of the Board:

1. The chairman and the officers.
2. The members of the Board.
3. Any deputation or other persons who may have publicly to transact business with the Board.
4. The Press.
5. The public.
6. Those visitors who, by reason of their rank, &c., are privileged "to occupy seats on the bench" beside the chairman.

It is in the interests of Class 5—the common, vulgar, impertinent, inquisitive, awkward, rate-and-coal-tax-paying, public—that I write. Hitherto, these intruders have been placed in a small gallery at one end of the room, and have been able to hear the debates and proceedings very well indeed; and they heard them because the reporters were also placed in the same gallery,—these latter upon the front seat. Now the move is to place the reporters in the body of the room, and, I suppose, to leave to the public the whole of the gallery at the end of the room. Hitherto, the members, in their speeches, were obliged to speak in such a tone of voice that the public must hear, or (as the reporters were close to the public) the speeches could not be reported. The officers, also, in reading their reports, were obliged to speak up, or the reporters could not catch the drift of the debates on the reports. Let us hope that, in rearranging the public meeting-room of the Board, the seven members who constitute the committee to which the question is intrusted will remember that their duty is to arrange the room so that the public can hear the proceedings.

RATEPAYER.

ACCIDENTS.

A SHOCKING accident has taken place at Messrs. Cubitt's building yard. A labourer employed in white-washing the premises got his clothes entangled in the machinery, and had every bone in his body literally crushed to pieces. He had sufficient consciousness and self-collectedness to state that he was taken round fourteen times by the wheel. He died shortly afterwards, and a verdict of accidental death has been returned.

A fatal accident has also occurred at the works of Messrs. Cooke & Swinnerton, Grimesthorpe, which resulted in the death of two men and the more or less serious injury of three others. Messrs. Cooke & Swinnerton have been adding to their works by the erection of a large forge and rolling-mills. The new buildings were commenced in March last, and it was expected they would have been completed in the course of a few weeks from the present time. One of the buildings is so far advanced as to permit it to be roofed, and at the time of the accident the workmen were engaged in putting up a portion of the roof of the second building. The framework of the roof consisted of a number of heavy iron principals, spanning the whole width of the building, and resting upon the walls on either side. Eight of these principals were up and fixed. Just as the men were about to raise the ninth, "something seemed to give way,"—as was described by an eye witness,—and seven of the principals came tumbling to the ground. Eight men were at work at the time, and only three of them escaped uninjured. Mr. Francis Taylor, the contractor for the roof, was in the building at the time of the accident, and he had a very narrow escape. As it was, he was knocked down, and one of his men fell upon him. The cause of the roof giving way is unknown, and at present the accident seems inexplicable.

CHURCH-BUILDING NEWS.

Cleator Moor.—The new church of St. John, at Cleator Moor, has been consecrated by the Bishop of Carlisle. The new edifice is an adaptation of the Norman style of architecture to the requirements of the present day. Externally, it is a plain, unpretending building, suited to the district in which it stands, where any external ornament would rapidly become disfigured with soot, and be out of harmony with the immediate neighbourhood. The width of the walls—all 4 ft. thick—give a solidity, in look and reality, which is in their case necessary, as the whole church is covered with vaulting which rises to a height of 40 ft. over the nave. This vaulting supports the timbers of the roof. In the chancel, the groining ribs and the chancel arch are of wrought stone. All the other portion of the church is lined with brick, pointed; and a cavity between the outer wall and the inner one of brick is filled with asphalte, to keep the inner wall dry. The seats are of pitch pine. Stained glass windows (donations) adorn the east and west ends. The original estimate given by the architects (Messrs. Cory & Ferguson, of Carlisle) for the church, without the parsonage house and cemetery walls, was 3,300*l.*, which sum is rather above the finished cost. Accommodation is afforded for 600, 450 being adults and 150 children.

Rickmansworth.—The church erected by public subscription at Croxley Green, has been consecrated by the Bishop of Rochester. The edifice has now been completed some months. It stands on a portion of the green immediately abutting the high road from Watford to Rickmansworth, and is built in the style which prevailed in the thirteenth century, or transition from the Early English to the Decorated. The exterior is cased with Bath stones, the quoins, windows, &c., being composed of a stone obtained from the quarries of Doulting, in Somersetshire. The roof is covered with Staffordshire tiles, and the circular spire surmounting the tower with ornamental tiling of the same description. The entrance is on the south side, where there is a porch with a flight of steps. The tower, which is placed on the north side of the church, forms an entrance to the vestry. In the interior, the walls are cased with red bricks, diapered with blue bricks in ornamental patterns. The roof is of open timber, the chancel being vaulted with wood work. The flooring is for the most part of Godwin's plain tiles, but the chancel is laid with ornamental tiling. The seats are made of English oak, and the chancel is fitted with carved stalls. The reredos is composed of arcading in Caen stone, the centre panels being adorned with some wrought canopy work. The pulpit is composed of Doulting stone. At the east end is a painted glass window. The building will be lighted by gas, by means of three coronas. The church, which has been erected at a cost of some 2,500*l.*, is capable of seating about 250 people. The edifice has been built by Mr. Clark, of Bath, from designs by and under the superintendence of Mr. Norton, of London, architect. The ground surrounding the church has been laid out by Mr. Skidmore, of Rickmansworth.

Balderstone, Rochdale.—St. Mary's Church, which completes the group of buildings, comprising church, vicarage, and schools,—all erected by the liberality of the Messrs. Radcliffe,—has been consecrated by the Bishop of Manchester. The site is triangular in shape, bounded on the east by the main Oldham-road; on the west by the old road to Oldham; and on the north by a street passing close to the churchyard, and leading to the Greenfield Mills. The principal view of the church,—if, indeed, one be superior to another,—is the north-east, which is seen on approaching the church from the town. It takes in the east chancel gable, mainly occupied by a large five-light traceried window. The stonework of the window is moulded, and on each side of it is a slender shaft, with a carved capital. This, like each of the main gables, is surmounted by a carved stone cross. The tracery of the windows is considerably varied, although there are some forty or fifty in the church, besides those of the belfry. On walking round the outside from the east towards the north, on the north side of the chancel is seen a two-light window, lighting the sanctuary; and further on, under the eaves, a pair of clearstorial rose windows. The east gable of the organ-chamber, containing a three-light traceried window, a little square quatrefoil on the north side of the organ-chamber, and a small window on the east of the transept, come next in order. In the north gable in this transept is a rose window, 10 ft. or more in diameter. Below it is a buttress, circular on plan, resting on an hexagonal base, and flanked on either side by a pair of narrow cusped windows. A carved band runs across this gable, above the large rose window. At the extreme north-west corner stands the steeple, with a tower and spire rising to a height of nearly 150 ft. The spire is a broached octagon, with canopied pinnacles rising from the broaches. The west gable contains a large four-light window; below it is a projection of some

feet, with a battlemented cornice. The south elevation generally resembles the north, except that the details are different. In the interior, the marbles, granite, and alabaster; the coloured mural decoration; and the colours of the stained glass, all contribute to enhance the general effect. The eastern end especially attracts the eye. The chancel fittings are of oak. The east wall of the chancel is almost entirely occupied by the reredos and the east window. On each side of the chancel are large arches, opening into vestry and organ-chamber respectively. The east chancel-window is of five lights, and is filled with stained glass, in subjects, by Messrs. Heaton, Butler, & Bayne. The transept windows, and those at the west ends of the aisles, are also filled with stained glass by the same firm. The great west window,—which is a memorial one,—is filled with subjects all relating to the Resurrection. The rest of the glazing is in simple patterns in various shades. The church is lighted by brass gas standards, one in the centre of each of the nave arches. There are two gas coronas in the chancel, and supported against the wall by floriated brass brackets. The general contractor is Mr. Mark Foggett, who has carried out the work from the designs, and under the superintendence, of the architects, Messrs. Medland & Henry Taylor, of Manchester.

Little Laver.—The church of St. Mary the Virgin, in this parish, has been re-opened, after having undergone alterations, embellishment, and enlargement. The ancient fabric, which possessed several features of interest, has been completely renovated; the old eastern wall and window have been replaced by a chancel arch, and a new chancel has been added, thus considerably increasing the accommodation. The church is benched with new carved oak benches, choir stalls of the same material being substituted for the high-backed pews. The restoration has been in progress about twelve months, and has been carried out under the direction of Mr. J. Goldicutt Turner, of London, architect, the cost having been defrayed by the Rev. Richard Palmer, rector of Purley, Berks, the brother of the late rector, and as a tribute to his memory.

Middlesbrough.—The foundation-stone of St. Peter's Church, Lower Feversham-street, Middlesbrough, has been laid. The church is cruciform in plan, consisting of a nave, two transepts, and a chancel. The chancel has an apsidal end. The style of the architecture is Early Gothic, of a plain description. There will be sitting accommodation for about 315 persons on open benches. The roof will be open-timbered. Mr. Blessley, of Middlesbrough, is the architect. It is estimated that the cost of the church, which will be built of red-pressed brick, will be about 1,500*l.* Mr. H. W. F. Bolckow, M.P., gave the site.

Rotherhithe.—A new church at Rotherhithe, erected to a great extent at the expense of Field-Marshal Sir William Maynard Gomm, G.C.B., lord of the manor of Rotherhithe, has just been opened. The church, which is dedicated to St. Barnabas, is situated in Plough-road, on what was once an expanse of market-garden ground, extending from the Surrey Commercial Docks and the new Southwark-park, to the boundary of the parish of Deptford, where the counties of Surrey and Kent join, but which is now a populous neighbourhood, laid out in numerous streets. The architectural proportions of the church are striking, although the materials used are plain. A large portion of the interior fittings and other articles are presents from friends. A costly marble font is a present from Lady Gomm. The pulpit is given by Mr. Charles Churchill; the altar by the architect (Mr. Butterfield); the lectern by the Rev. H. Bailey; the font-ewer by Mrs. Bailey, and the organ by the rector (the Rev. J. E. Beck) and his private friends. The cost of the church, exclusive of the gifts named, is 5,000*l.* In connexion with the church a site has been given by Sir William Gomm for new schools, which are to be immediately erected.

Wetheral (*Cumberland*).—The restoration of the church here is commenced. The contract has been taken by Mr. Orniston, of Warwick. It is intended to complete the chancel before proceeding to commence the nave and aisles. The dean and chapter of Carlisle undertake the chancel, the rest falling to the parish. Mr. Withers, of London, is the architect. The estimated cost is about 2,000*l.*

Southleigh.—The parish church has been re-opened, after having undergone a restoration. The bishop of the diocese separated the living from that of Stanton Harcourt, and gave it to the present vicar, the Rev. G. Moultrie, and Mr. Sibthorp added considerably to the endowment of the church. A house for the clergyman to reside in being now very much needed, his present residence, which is a commodious one, and designed by Mr. John Gibbs, of Oxford, architect, was soon afterwards built by voluntary contributions and grants from different societies, at a cost of about 1,600*l.* Next came the new schoolrooms, which have been erected just below the village green. Mr. Sibthorp gave half an acre of land on which to erect them, and also a large sum of money towards the carrying out of the work. This gentleman has also been instrumental in the restoration of the church. The chancel has been newly roofed, and the floor laid with encaustic tiles. There is also a new oak altar, the front of which is carved and decorated. On the centre vesica is painted Our Lord in glory, and on the side panels are four figures symbolising the worship of heaven and the worship of earth. There are new oak stalls for the clergy and choir. The ends of the stalls are carved, and in the front part of the backs of the same is tracery work. The roof is of open deal, varnished. The whole of this part of the work was done by the Ecclesiastical Commissioners at a cost of about 300*l.*, and the architect for the same was Mr. Christian, of London. A new stained-glass east window has been placed in the church, this being the gift of the family of the late Mr. S. Druce, of Eynsham. The subject is that of St. John the Baptist, who points to the Lamb of God in the distance, and in the top lights are angels holding instruments of the Passion. The wall paintings have been restored by Messrs. Burlisson & Grylls, of London. The subjects are "The Resurrection," "The Gates of Heaven," "The Weighing of Souls," "St. Clement of Rome," and "The Annunciation." The ancient oak pulpit in this church, in which John Wesley preached his first sermon in 1726, has been preserved. The base of it, however, has been rebuilt with Milton stone, inlaid with encaustic tiles. The chancel is divided from the nave by the old carved oak screen with tracery work, and surmounted by a cross. The old deal pews and other seats in the body of the church have been replaced by low-backed seats of pitch pine, varnished. The ends of these seats are also carved. The floor of the aisle and nave are laid with black and red tiles; and that under the seats is of wood. The church is heated with hot-water pipes, which run along the whole length of the building under the nave and aisle. The old altar has been removed to the side chapel, which is at the east end of the north aisle. The wall-paintings were restored at the expense of Mr. Sibthorp. An olive-wood cross has been presented to the church by Mr. Evans, to be placed on the altar; the wood grew on Mount Calvary. The porch at the south entrance to the church was in a very dilapidated state, and it was therefore taken down and rebuilt with local stone. The dressings are of Milton stone, as are also the corbels, springers, coping, apex, and cross above. The churchyard has, for the most part, been levelled, and new paths laid out. Mr. C. Rolfe, of Reading, was the architect, and Mr. Groves, of Milton, the contractor for the whole of the work. What has already been done has cost about 1,000*l.*, and an outlay of upwards of 300*l.* more is required for re-roofing the body of the church. The woodwork of the tower and the bells are also in urgent need of restoration.

Hertford. — The alteration and extension of All Saints' Church have been long talked of, and at length the works have been begun. Mr. Norris is the contractor. The proposed alterations and extensions comprise an addition to the north transept, which will run parallel with and nearly to the end of the chancel, comprising within its walls a new organ-chamber and a vestry-room, and a number of additional sittings. The gallery, which now extends over the north transept, is to be shortened, to correspond with the opposite side, and the pulpit and reading-desk are to be new, and placed opposite to their present positions, and material improvements are to be made near the communion-table. The works are from the designs of Messrs. Wilds & Son. Delay has been caused by suggested alterations in the plans, and impediments of various kinds.

Llanarth (*Cardiganshire*).—The church has just been re-opened, after extensive alterations. The nave and chancel were modern, and have been entirely remodelled, with new windows, roofs, and fittings, and the ancient tower repaired. The expenditure has been about 900*l.* Mr. Withers, of London, was the architect, and Messrs. Jones & Sons, of Llwyngog, were the builders.

SCHOOL-BUILDING NEWS.

Salterhebble.—A new infant school, to be connected with the national schools at All Saints', Salterhebble, is about to be commenced. The site is on the sloping ground in Chapel-lane, and the design is by Mr. Barber, architect. It will have a large room, 40 ft. by 19 ft., and a class-room, 17 ft. by 13 ft. Beneath the school-room is a covered playground, 30 ft. by 19 ft., opening by large arches into the playground. The building will be erected at the cost of Col. Holdsworth.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Northfleet.—The school-church of SS. Mary and Francis has been opened by the celebration of Pontifical mass by the Bishop of Southwark. The building is of flint, with stone and brick dressings, and is the work of Mr. Thomas Blake, from designs by Mr. James Multon, of Gravesend. It is in the Early English style, and measures on the outside 64 ft. by 24 ft. It has an open roof, slated on the outside, with ridged tiles at the centre, and surmounted by a bell-turret, and crosses at the extremities. The chancel can be screened off at pleasure by a serviceable contrivance.

Greenburn.—The new Roman Catholic Church about to be erected here, will be in the Early English style, and will consist of nave, semi-octagonal sanctuary and vestry, the accommodation being for 600 persons. The architects are Messrs. W. & R. Ingram, of Glasgow.

Wigan.— The chapel in Caroline-street, which formerly belonged to the Primitive Methodists, having been purchased by the Roman Catholics, and used by them as a place of worship, the chapel has been considerably enlarged—has, in fact, been almost rebuilt,—and it has been formally opened as a church, dedicated to St. Joseph. The edifice is situated on the north side of Caroline-street, and it consists of a wide nave and a north aisle, wooden arches and columns separating the nave and aisle; a space is railed off at the end of the nave for the purpose of a sanctuary. At the same end of the church, and on the aisle side, the sacristy is situated. The choir is constructed above the sacristy, and, consequently, its position is close to the sanctuary. From the end of the building opposite the altar may be seen the gallery, and under it in the south or street wall the porch, with a glazed screen and folding-doors. On the north side, at the foot of the gallery stairs, is an extra door, to be used in cases of emergency. The plot of land which the erections occupy is nearly a square. On the north side there were the lights of the adjacent buildings to be studied; this circumstance accounts for the shape of the roof on the north side, and of the low aisle. The south or Caroline-street elevation is lighted by a series of lancet windows, the jambs of which are worked in moulded bricks from St. Helen's. The entrance door is moulded with brickwork. Generally, the materials have been of the simplest character, and the old work, where possible, has been used up again. The principal object of the design seems to have been to arrange the building to be comfortable, and adapt it to modern requirements, and at the same time out of plain materials to obtain as much church-like effect as possible. The church will accommodate about 900 people, and the entire cost will be about 1,500*l.* Mr. Aspinall, of Wigan, was the builder employed, and the works have been carried out from the design of Mr. Edmund Kirby, architect, Liverpool.

Harrogate.—Dr. Cornthwaite, Roman Catholic Bishop of Beverley, has blessed the first stone of the high altar of a church now in course of erection at Harrogate, and dedicated to St. Mary and St. Robert. The altar stone was laid, of course, with the rites and ceremonies of the Roman Catholic Church. The church is being built after designs of Messrs. Goldie & Child, London; the contractor being Mr. Wood, builder, Leeds. It consists of nave and two aisles, divided by pillars. The cost of the building will be 3,400*l.*, exclusive of the internal fittings, and there will be accommodation for 600 persons. The building is of red brick, with stone dressings, and has an open timbered roof, and square tower of brick and stone.

FROM SCOTLAND.

Moffat.—The new Episcopalian church at Moffat has been opened for divine service. The church, which is built on a deep-laid brick foundation, is situated in Millburnside, which has been recently much widened, and stands about 30 feet off the road, surrounded by gravel walks and shrubbery plots. The walls are of wood, coated with galvanised, corrugated iron, of a dull bluish tint. The sides are buttressed, and up these buttresses the gas pipes are led, encased, and are taken thence into the interior. Along the ridge of the roof, ventilators are arranged, and these are topped with ecclesiastical ornaments. At the western end, over the porch (in which there are two entrances), there is a small belfry. The whole structure externally assumes the form of a cross, the chancel at the east forming the top, the transepts with the organ chamber and the vestry, the arms; and the nave, with the porch, the foot. The chancel is 14 feet by 15 feet, the vestry and the organ space each 9 ft. square, the transepts are 21 ft. by 8 ft., and the nave is 55 ft. by 22 ft., with a passage 4 ft. wide up the centre. The walls rise 14 ft. inside, and the roof slopes up till the mid height rises to 26 ft. Over the folding entrance-door there is a traced and stained trefoil window. In the side walls there are three long painted windows, and in each of the transepts there is a tripartite Gothic window. Above the altar there is a memorial window, in three divisions, executed by James Ballantine & Son, Edinburgh, to whose taste also the other interior ecclesiastical decorations are due. The central design of this window is a Crucifixion scene. On the right is the Holy Family in the stable at Bethlehem, while the wise men worship, and the star in the East shines overhead. On the left we have the angel at the sepulchre, with the women around him. An organ (manufactured by Willis, London), occupies the space on the left. The church has been erected at the sole expense of Mr. J. Toulmin Laurence, of Liverpool, resident in Craigieburn House.

Peterhead.—The foundation-stone of a new public hall for Peterhead has been laid, with masonic ceremonial.

The Caithness Railway.—The works on the Caithness Railway are being rapidly proceeded with, the contractors for the different sections having strong forces of men engaged. The comparatively level nature of the county renders railway-making an easy task. One of the heaviest cuttings in Caithness, about two to three miles from Wick, is from 18 ft. to 20 ft. deep, and its excavation is being vigorously prosecuted. The large bridge which will span the river in this section, has, it is understood, been contracted for by an Inverness gentleman. In the west end of the county the work is considerably further forward than in the neighbourhood of Wick.

PROVINCIAL.

Appleby, Westmoreland. — Mr. John Alcock Heeles is just having completed the erection of a mansion (Garbridge House), on the east of Bongate, near to which runs the Eden Valley, and the Settle and Carlisle Railways, parallel with each other. The style of the building is Early Domestic Gothic: Mr. Octavius Hansard, of London, is the architect. The ground-floor comprises drawing-room, morning-room, library, dining-room, smoking-room, entrance-hall, and spacious staircase, and servants' offices. The first floor consists of six rooms, with dressing-rooms attached, together with bath-room, and a billiard-room, 29 ft. by 18 ft., the latter being constructed with wagon ceiling, 15 ft. high, and of superior ventilation. The whole of these rooms are fitted with pitch-pine varnished, with the exception of the airing-room, which is of English oak. The ceiling is panelled with oak beam and pitch-pine panels, the floor of the same having a border of parquetry, 2 ft. wide. The principal stairs are of pitch-pine, with twisted balusters and ornamented with a variety of fretwork, the same being lighted with a ribbed dome-light, opening into a lead flat in the centre of the building, the floor of which is all of parquetry. A private stair leads to servants' bedrooms, on the second floor. There is a cistern in the roof capable of containing 1,200 gallons of water, which is pumped up, after being filtered, from a tank outside, of 5,000 gallons, and underground, but entirely depending on the rain that falls for its supply. The elevations are of the height described, with two bay windows, of large dimensions. There is also a large oriel window. The entrance-porch, of rather large dimensions, gives the north front relief, from its carriage-drive. It is ceiled by a ribbed groined arch, and externally finished with a parapet. The masonry is of stone from Barwise Quarry, and is lined with 9-in. brick, leaving a 3-in. cavity between stone and brick. The offices not directly connected with the house are composed of the same material. The whole of the work has been carried out under the direction of the architect, by Mr. M. Little, of Penrith, contractor; Mr. Wm. Court, Carlisle, joiner; Johnston, Brothers, & Co., plasterers; Martindale & Jackson, Appleby, plumbers, painters, and glaziers; the slating by T. Dodger, of Appleby; hot water, Bailey & Son, London. The self-closing shutters, of which the whole of the principal or ground-floor are fitted, are by Clark & Co., of London. The clerk of the works is Mr. McDonald Taylor, of London.

VARIORUM.

"Professional Papers on Indian Engineering: Second Series: edited by Captain A. M. Lang, R. E., Principal, Thomason C. E. College, Roorkee. No. IV. April, 1872. Roorkee: Thomason College Press." Two of the chief papers in this publication are on irrigation in India—the one titled, "Is Irrigation Necessary?" by Captain C. S. Thomason, R.E.; and the other, "A Report on certain Experiments in Irrigation," by E. C. Palmer, C.E., Exec. Engineer. It also contains reports, &c., on bridge foundations on Punjaub State railway; a paper on the Toolsee Water Supply Project, by Rienzi G. Walton, C E., acting executive municipal engineer, Bombay; and matter on the subject of the Delhi Iron Pillar, with a frontispiece.——"Papers on Subjects connected with the Duties of the Corps of Royal Engineers, contributed by Officers of the Royal Engineers. New series, vol. xx. Printed by Jackson & Sons, Woolwich. 1872." The leading paper in this series is an excellent memoir of Field Marshal Sir J. F. Burgoyne, bart., G.C.B., by the Right Hon. Sir Francis Head, bart. We have hitherto known too little of this great general, and it is to be hoped the present brief memoir will be extended. Most of the other matter in the volume is strictly professional, but includes notes on earthworks, demolition of bridges, huts in war, rails and turn-tables, tunnels, &c.——"Transactions of the Manchester Statistical Society, Session 1871–72. Manchester: Roberts, Printer, Chapel-street, Salford. 1872." The paper of chief interest to our readers in this volume is one on "Town Dwellings for the Working Classes," by G. T. Robinson, F.R.I.B.A. There is an inaugural address on the scope and method of statistical inquiry, and on some questions of the day, by John Miles, the president. A paper on "Certain Fallacies in Local Rates of Mortality," by Dr. Rumsey; one on some published results of the census of 1871, by Thos. A. Welton; one on the "Growth of the Commercial Centre of Manchester, Movement of Population, and Pressure of Habitation," by H. Baker.

From *Cassell's Technical Educator* for the new month we get some information as to the means of turning a cube in a Lathe:—

"To turn a perfect cube in the lathe would appear, at first sight, an impossibility; but in reality this is a most simple form to produce,—much more so than the sphere. The cube is a six-sided solid, and all its sides are plane surfaces. We already know that it is as easy to turn a plane surface in the lathe as to turn a cylinder; and to produce a cube, it is only necessary to turn six plane surfaces in certain positions, the one with the other. The turner would proceed as follows:—He would first take a piece of wood sufficiently large to enable him to turn a cylinder out of it, with a diameter equal to the diagonal of the square side of the tube. And this also he would do, cutting the cylinder off to a length equal to the side of a square. This would then show a short cylinder, with two flat ends, or a thick flat disc, and this disc would be placed in a chuck in a position at right angles to the position in which it was turned,—that is to say, the axis of the cylinder is placed parallel to the surface of the chuck; and the lathe being set in motion, a third surface is turned upon the article, which is then removed from the chuck, and replaced with this third flat surface bearing against the surface of the chuck. In this position a fourth flat surface can be turned upon the article; and if the settings have been carefully made, these two last surfaces revolve at right angles to the two, forming the ends of the cylinder. Two further similar settings of the work in the chuck will enable two other surfaces to be turned, and these will complete the cube."

Bursting of a Sewer.—The immense quantity of rain which fell during the thunderstorm in London on Tuesday evening in last week, caused a sewer just above King's-cross Station to burst. A large body of water flowed into the tunnel, in some parts to the depth of 5 ft.

Miscellanea.

The Brighton Meeting of the British Association.—The meeting will commence on Wednesday, August 14, and continue till Thursday, August 22, when it will close with the usual excursions for members and associates. The president-elect is Dr. W. B. Carpenter, F.R.S., &c., who will deliver his inaugural address on the evening of the 14th. On Thursday evening, the 15th, and on Tuesday evening, the 20th, *soirées* will be held. For these the northern block of the Pavilion property will be appropriated. The Brighton Natural History Society are arranging a complete flora of the south coast, both living and dried specimens; also a microscopical display to which the most eminent London makers and the leading metropolitan societies will contribute. On Friday evening, the 16th, and Monday evening, the 19th, lectures will be delivered by eminent scientific men. It is authoritatively announced that the information received from Dr. Livingstone will be communicated in the geographical section. Mr. Stanley and Dr. Livingstone's son will probably attend the meeting. The geological section will have especial importance by reason of the boring now being made on the estate of Mr. W. Mappin (of Regent-street) at Netherfield, near Battle. The problem is, what underlies the Wealden formation of Kent and Sussex; is there any coal there? Four "half-day" excursions are arranged for Saturday, August 17; and five "whole-day" excursions for Thursday, August 22. The new Brighton Aquarium will be opened and stocked for the meeting. The Brighton Railway Company will issue return tickets to members of the association, available on the 12th August and any following day, to return by any train and on any day to the 26th August.

Steam Whistles.—Mr. F. S. Powell has laid before Parliament, too late, it is said, to pass in this session, a Bill proposing to prohibit, under a penalty, the use of any steam whistle or steam trumpet for the purpose of summoning or dismissing workmen without the sanction of the sanitary authority. The Bill gives power to the sanitary authority to revoke such sanction, and power to the Local Government Board to revoke it on representation made to them by any person who is prejudicially affected by such sanction. The Bill has passed through committee in the House of Lords. Is nothing to be done, however, towards restricting railway stokers or engine men from amusing themselves, at the public expense, both night and day, with noises of the most hideous description, which, even on their own showing, are frequently most excessive and unnecessary, inasmuch as some of them habitually act with a little common sense and consideration for the public, while others as habitually do the contrary, and without the least restriction from the railway authorities; whose screechers, moreover, are obviously, in some cases, of tenfold too great strength, since others used under similar circumstances are far weaker and yet are kept in use, and must therefore be sufficient for the purpose? Such an infamous nuisance ought to be abated, and would very soon be abated if it were committed by the costermongers or other poor and defenceless persons.

Cottage Hospitals.—The new cottage hospital at Tewkesbury has been completed, from designs furnished by Mr. Middleton, of Cheltenham. Seven years ago a cottage hospital was established in Tewkesbury, two cottages having been taken for the purpose. The new building is near the temporary hospital, and not far from the railway station.——The foundation stone of a new cottage hospital has been laid at Driffield. The site of the building is on the Nafferton road, in a pleasant and healthy position, and about a quarter of a mile from the town. The building will be a commodious one. The architect is Mr. Hawe, of Beverley; and Mr. George Whiting is the contractor. During the five years the institution has been in operation, it has effected much good, and a great number of patients have been cured, and some remarkable surgical operations performed.——The village hospital at Ditchingham, Norfolk, is now being roofed in. It will provide about twenty beds for patients, besides all the necessary accommodation for sisters, nurses, and domestic arrangements. Mr. Botwright, of Bungay, is the builder, who also supplies all the bricks and tiles from his brickfield. The cost will be about 3,000*l*. The architect is Mr. R. J. Withers, of London.

The late Fire at Hartshill Church, Stoke-upon-Trent.—A meeting of the pewholders and congregation of Holy Trinity Church, Hartshill, has been held to receive and consider Mr. Gilbert Scott's report of damage done by the late fire, and estimate of restoring the church. Mr. Scott, in his report said that the damage to the nave and chancel was not great but the tower had been considerably damaged, whilst the spire was also slightly injured. He made suggestions for restoring the church, the cost of which he estimated at 1,900*l.* Mr. Campbell, who produced the report, added that the cost of the recent decorations was about 300*l.* A new clock would cost 190*l.*; a new bell, about 100*l.*; and a new organ, such as they could manage with, at least 600*l.* Mr. Scott had made suggestions for the better lighting of the chancel, which would cost 400*l.* That would make about 3,500*l.* In addition, there would be the architect's commission and other costs. The alterations required for improving the chancel he (Mr. Campbell) would pay for, and he would give another 100*l.*, making his contribution 500*l.* Beyond his contribution, they would have to raise over 2,800*l.* A committee was appointed for the purpose of raising subscriptions. The total amount promised in the room was about 620*l.*

Serious Risks on the Underground Railway.—During the thunderstorm that passed over London on Tuesday night before last a most exciting scene took place near York-road Station, which is situated in a deep cutting, and the fall of rain was so heavy that a large amount of water had accumulated. As soon, therefore, as the 6·18 train from Barnet, filled with passengers, emerged from the tunnel, the water had reached such a height that it put the engine fires out, and the train was brought to a standstill. The points would not work, the sleepers were afloat, and the wires of the telegraph could not be used. The express which runs on to Farringdon-street was at the time overdue. The majority of the passengers were unable to leave the carriages, owing to the depth of the water; women were fainting; and even the servants of the company seemed paralysed with fear. In the midst of the crisis the express did come up; but the same cause which had placed the Barnet train in its terrible position proved its salvation, for the water also put out the fires of the express engine, which drew up within about 5 ft. of the hindermost carriage of the former train!

The Worcester Model Dwellings Association.—The annual meeting of the members of this association has been held. Mr. G. W. Hastings presided, and there were also present Rev. T. L. Wheeler, Messrs. F. Parker, J. W. Isaac, and H. Aldrich (secretary). Mr. Aldrich read the report, which was unanimously adopted. It thus opened:—"In presenting their eighteenth annual report, your governors are sorry to observe that the causes which have for some long time militated against the well-doing of the model buildings still continue, and, indeed, with greater force. During the past year the two adverse influences, viz., reduced rentals and increased expenditure, have been more strenuously at work than before, to render the financial portion of the association more unsatisfactory. . . . The proprietors may rely that if the anticipations are unfortunately not realised in the course of the next twelve months, they will then be called together to consider the best method of dealing with their property."

Tunbridge County Bridge. — A work of some importance to Tunbridge has just been commenced. It is that of pulling down the narrow, dangerous, and inconvenient structure known as the Little Bridge, and of widening the northern approach to it. The entire expense of re-construction has been undertaken by the county, at a cost of 1,471*l.*, the contracts accepted being those of Mr. George Butchard, for the smith's and founder's work, at 995*l.*, and Messrs. Lacy & Torkington for the remainder of the work, at 476*l.* The preparatory work of constructing rafts, driving in piles, &c., is already completed. The county surveyor (Mr. Martin Bulmer) has the superintendence of the work, and the surveyor to the Local Board (Mr. Hobbs), is to render assistance as the work progresses.

The Late Dr. Aldis.—We hear with very great regret of the death of Dr. C. J. Aldis, the earnest and painstaking medical officer of health for St. George's, Hanover-square. He threw himself heart and soul into all sanitary work: knew what to do, and did it.

Ancient Remains at Compton, Berks.—On the summit of "Cowdown," in the occupation of Mr. Mathews, is a large circular entrenchment called "Purborough." It consists of a high bank, having a ditch or fosse without, and enclosing an area of about six acres. The vallum throughout its circuit exhibits unmistakable evidence of the action of fire. Here and there, large "Sarsen" stones, or drift boulders, have been met with, but always on the line of the earthwork, some of which are so large that the labourers have found it impossible to raise them, and so have sunk them beneath the reach of the plough. There are four large circular pits, or excavations, on the eastern slope within the enclosure; they are cut in the chalk. There is a Roman encampment visible at the "Slade," in the vicinity of Compton. This entrenchment at "Cowdown" was a stronghold of the Britons, which they must have endeavoured to hold against their more disciplined foe.

New "Constitutional Hall" for Dukinfield.—The foundation stone of a new Constitutional Hall at Dukinfield has been laid by Mr. W. Cunliffe Brooks, M.P. The St. John's District Constitutional Association was established four years ago, and since that time its members have met in premises located in Oxford-road, Dukinfield. The site of the new hall is in Oxford-road, one side of the building being in Hyde-street. The intended building is to be in the Gothic style; the external dimensions being 60 ft. by 47 ft., and comprising one large room (60 ft. by 28 ft.), billiard-room, reading-room, library, and smoking-room. The usual conveniences for hot water, &c., will be in the basement. It is expected that the cost of the structure will amount to 850*l.*, but in addition to this 200*l.* have been paid for the land. The architects are Messrs. J. Eaton & Son, of Ashton-under-Lyne; and the builder is Mr. J. Crabtree, also of Ashton.

The Steam Roller in Hackney.—A report on the use of a steam roller in the repair of roads, by Mr. James Lovegrove, C.E., chief surveyor to the Hackney District Board of Works, has been issued in a printed form, by order of the Board. It recommends the continued use of the roller, which "will do more good in three turns over the road than the horse-roller will do in twelve." It is more desirable, the reporter thinks, to hire than to purchase, at starting, with option of purchase. Its first cost is 550*l.*; and it can roll 700 to 800 yards per day. The horse-roller, at work in Hackney, costs 1*l.* 4s. a day, and the steam-roller belonging to the Islington district costs, in working, about 1*l.* 12s. a day. On hire, including watching and water, it cost 4*l.* 10s. 6d. as against 2*l.* 10s. a day with watching and water.

Presentation to an Employer.—On Tuesday evening last, the workmen in the employ of Mr. J. Dalby Hobson, Wesleyan Chapel builder, of Duke-street, Adelphi, invited him to a supper at the St. Martin's, after which they presented him with a handsome alabaster time-piece, bearing a suitable inscription, engraved on an ornamental plate. The presentation was made on behalf of the subscribers by Mr. John H. Jones, the general manager, who, in his address, alluded to the good feeling which has always existed, and to the total absence of strikes in the firm. Mr. Hobson, who has just completed some contracts at the Wesleyan Training Colleges at Battersea and Westminster; also chapels at Richmond, Putney, North Woolwich, and Hadley, was necessarily much gratified by the demonstration.

Unhealthy Houses.—The Artizans and Labourers' Dwellings Act, 1868, has been put in force by the St. Giles's District Board of Works for the removal of thirty of the most squalid houses in that district. The medical officer of health having certified that these houses were unfit for human habitation, the legal notices were issued for their demolition. In the case of two the property was in Chancery, and an appeal was lodged against the decision of the Board. The appeal was heard on Wednesday before the justices at Westminster Guildhall, when the Board's decision was confirmed.

In Japan considerable reforms were taking place when the last mail left. The Government had established a patent law. Women have been granted the same rights as men as regards visiting the temples, &c.; all indecent pictures and exhibitions are henceforth prohibited; gas will shortly be laid at Yokohama; a fine suspension bridge is being erected at Yedo; and the burnt-down part of that city is being laid out in streets, 90 ft., 60 ft., and 48 ft. wide.

Monumental.—The statue of the late Lord Stanley of Alderney, by Mr. George Nelson, has been placed on the altar-tomb in Alderley Church, Cheshire. The figure is life-size, in a recumbent position, and represents his lordship in the peer's robes. The likeness, which was obtained from a cast taken after death, is pronounced by Lady Stanley and the different members of the family to be very successful. Of the tomb we have already spoken.

Monument to King Robert the Bruce at Stirling.—A monument is to be erected in Stirling to King Robert the Bruce. Government have given permission to erect it on the esplanade of Stirling Castle.

Builders' Benevolent Institution.—In the report last week of the annual meeting of this charity, it was omitted to mention that while the accounts showed an increase in the amount paid to pensioners, the working expenses of the Institution had decreased.

New School Board Offices.—By an Act of Parliament just printed, the powers of the Elementary Education Act, 1870, are extended in regard to the borrowing of money to enable the School Board for London to purchase lands required for the erection of offices for the Board.

Strike of Masons in Preston.—The stonemasons in Preston are at present out on strike, in consequence of the masters refusing to accede to their demand of an advance of wages of 6d. a day, and 6d. a day extra, as expenses, for every mile they are employed beyond the boundaries of Preston.

TENDERS

For alterations to the workhouse of the Westminster Union. Mr. E. R. Blatchley, architect:—

Warne & Son	£1,459 0 0
Harding	1,375 0 0
Simpson	1,260 0 0
Cock	1,250 0 0
Copp	1,169 12 10

For stables, &c., at Blackfriars, for Messrs. Spiers & Pond. Quantities supplied:—

Avis	£3,650 0 0
Adamson	3,649 0 0
Manly & Rogers	3,581 0 0
Tulley	3,450 0 0
Bracher & Son	3,305 0 0
Trevena	3,299 0 0
Oliver	3,200 0 0
Henshaw	3,179 0 0

For a gentleman's residence at East Sheen. Quantities by Mr. Gandy. Mr. E. Ingress Bell, architect:—

Simpson	£4,830 0 0
Turner	4,422 0 0
Henshaw & Co.	4,348 0 0
Gibbs	4,207 0 0
Higgs	4,180 0 0
Sharpington & Cole (accepted)	3,979 0 0

For rebuilding the parish church of Ysputly-Yys twith Cardiganshire. Mr. Withers, architect:—

	Church.	Tower.
Williams	£850 0 0	£170 0 0
Jones & Sons	725 0 0	140 0 0

For building parochial institution for St. Mark's, North Audley-street, George-street, Oxford-street. Mr. Withers, architect:—

Allen & Sons	£4,483 0 0

For sewers, &c., at Plumstead:—

Lowgan	£3,600 0 0 (!)
Henshaw	3,150 0 0
Harris	3,124 0 0
Morris	3,100 0 0
Bloomfield	2,968 0 0
Hubbard	2,750 0 0
Tongue	2,670 0 0
Marshall	2,500 0 0
Pizzey	2,487 0 0
Stevens & Crook	2,400 0 0
Kirk	2,399 0 0
Ritson	2,282 0 0
Riley	1,690 0 0 (!)

For vicarage-house, &c., at Hinckley, Leicestershire. Mr. William Wigginton, architect:—

Forster	£1,722 0 0
T. & G. Harrold	1,623 0 0
J. & W. Harrold	1,438 5 10

For warehouse, &c., Ely-place and Charterhouse-street, Holborn. Mr. William Wigginton, architect:—

Merritt & Ashby	£2,857 0 0
Axford & Whillier	2,600 0 0
Kent	2,511 0 0
Eaton & Chapman	2,351 0 0
Heath	2,293 0 0
Falkner (accepted)	2,112 0 0

For St. Michael and All Angels' Vicarage, London Fields, Hackney, E. Mr. Wm. Wigginton, architect:—

Hill, Keddell, & Waldram	£3,107 0 0
Hill & Sons	3,053 0 0
Killby	3,015 0 0
Heath	2,915 0 0
Falkner	2,898 0 0
Merritt & Ashby	2,851 0 0

For alterations to St. Mark's Schools, Old-street. Mr. William Wigginton, architect.

Henshaw (accepted)	£275	0	0

Accepted for Congregational Church, Hornsea, East Yorkshire. Mr. S. Musgrave, architect:—

Bricklayer's Work.

Hulse & Stephenson	£850	10	6

Joiner's Work.

H. & W. K. Barr	£533	5	0

Mason's Work.

Denton	£586	19	6

Plumber, Glazier, Gasfitter, and Painter's Work.

Barr	£165	0	0

Slater's Work.

Dawber & Sons	£79	0	0

Ironfounder's Work.

King & Co.	£41	0	0

Accepted for Congregational Church, in William-street, Hull. Mr. S. Musgrave, architect:—

Bricklayer's, &c., Work.

Musgrave & Son	£725	0	0

Joiner's Work.

Raven	£698	0	0

Mason's Work.

Waller	£298	0	0

Plumber, Glazier, and Gasfitter's Work.

Harrison	£138	0	0

Ironfounder's Work.

King & Co.	£62	0	0

Slater's Work.

Wilde & Sons	£97	4	6

Painter's Work.

Wright	£17	15	0

For house and business premises, at Leeds. Mr. S. Musgrave, architect:—

Pawson	£2,287	0	0
Thorpe	2,249	15	0
Britton	2,248	12	0
Longley, Bros.	2,232	0	0
Whiteley	2,182	10	0
Oakes & Son (accepted)	2,150	0	0

For proposed new premises, at corner of Nutford-place and Edgware-road, for Mr. R. Tyrell. Mr. Daniel Ruddle, architect:—

Perry	£3,540	0	0
Bullivant	3,367	0	0
Rodgers	3,240	0	0
Hill & Sons	3,167	0	0
Eblis	3,075	0	0
Nightingale	3,048	0	0
Wigmore (accepted)	2,946	0	0
Aitchinson & Walker	2,695	0	0

For stables, &c., at Beckenham, Kent, for Captain Scott, R.N. Mr. W. C. Banks, architect:—

Stimpson & Co.	£425	0	0
Carmody	393	17	0
Grubb	385	0	0

For alterations at Southend Mills, Lewisham, for Messrs. Ellis. Mr. W. C. Banks, architect:—

Hubble	£497	0	0
Stimpson & Co.	495	0	0
Grubb	439	0	0

Proposed Mission Hall and British Workmen's Institute, Tredegar-road, Bow. Messrs. Hills & Fletcher, architects. Quantities supplied:—

Wicks, Bangs, & Co.	£1,450	0	0
Aldous	1,428	5	0
Alexander	1,390	0	0
Gregar	1,365	0	0
Abraham	1,357	0	0
Grover	1,267	0	0
Salt	1,220	0	0
Sheffield (accepted)	1,185	0	0

For Infirmary to Aston Union Workhouse, Birmingham. Mr. Yeovil le Thomason, architect:—

Smith	£11,034	0	0
Matthews	10,880	0	0
Everal	9,955	0	0
Bennett	9,740	0	0
Parnell & Son	9,458	0	0
Jones	9,280	0	0
Barnsley & Sons	9,276	0	0
Cresswell & Sons	9,227	0	0
Jeffrey & Pritchard	9,065	0	0
Garlick (accepted)	8,648	0	0

For proposed works in forming a warehouse at Cross-street, Hatton-garden, for Messrs. Hopkin & Williams. Messrs. Scurry & Wright, architects:—

Tavener & Sons	£2,100	0	0
Mashman	2,009	9	0
Kilby	1,922	0	0
Langmead & Way	1,800	0	0
Watson, Brothers	1,779	0	0

For schools and residence, Chilworth, Surrey, for the Duke of Northumberland:—

Inkpen	£750	0	0
Etherington (accepted)	595	0	0
Sherborn	477	0	0

For incidental builder's work to engine, boilers, flues, &c., at the new Lambeth Workhouse, Kennington-lane. Messrs. R. Parris & T. W. Aldwinckle, architects:—

Yates	£434	0	0
Elliott	385	0	0
Crockett (accepted)	374	10	0
Trebble & Morley	360	0	0

For incidental builder's work to flour-mill, Lambeth new workhouse. Messrs. R. Parris & T. W. Aldwinckle, architects:—

Yates	£229	0	0
Trebble & Morley	207	0	0
Crockett (accepted)	189	10	0
Elliott	175	0	0

For St. Andrew's new schools and residences, Plaistow, Essex. Mr. James Brooks, architect. Quantities by Messrs. R. L. Curtis & Son:—

Foster (accepted)	£2,266	0	0

For conservatory and vinery works, at "The Lodge," East Acton. Messrs. Hutchins & Ogden, surveyors:—

Weeks & Co.	£501	0	0
Ramsey	363	16	3
Harris & Wondrop (accepted)	319	0	0

For house at Dockhead, for Messrs. Pocock. Mr. Geo. Elkington, architect:—

Capps & Co.	£1,010	0	0
Kirk	988	0	0
Perret	975	0	0
Deven	950	0	0
Buller	918	0	0
Tarrant	900	0	0

For alterations and additions to Nottingham Lodge, Eltham, Kent, for Mr. Alexander McEwan. Mr. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Lascelles (accepted)	£1,780	0	0

TO CORRESPONDENTS.

T. W. A.—K.—F. W. R.—W. I.—L. & W.—R. S.—W. C. B.—H. J. P.—W. C. J.—F. H. H.—H. I. B.—G. N.—H. T. G.—A. S.—J. R. E.—E. R. B.—W. B.—C. B.—F. H. H.—J. H. J.—S. & J.—J. W.—B. & Son.—J. B. D.—H. & P.—McD. S.—L. (have been given in the *Builder* before now).—J. W. (we cannot interfere in private disputes. We should merely mislead, evidence being incomplete).—J. W. B. (employ a proper person. There is no difficulty in the matter).—Reigate (next week).

We are compelled to decline pointing out books and giving addresses.

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CONTRACTS—*Continued from p. ii.*

PERSONS desirous of CONTRACTING for the RE-BUILDING of the VICARAGE HOUSE at Stanningfield, near Bury St. Edmunds, in the county of Suffolk, may send their names and references to Mr. CHRISTIAN, Architect, 8a, Whitehall-place, London, before AUGUST 5th. Mr. CHRISTIAN does not bind himself to reply to any such communication.

TENDERS are required for the COMPLETION of a PAIR of large SEMI-DETACHED VILLAS, at Silverdale, Sydenham, to be delivered not later than WEDNESDAY, 7th AUGUST instant, to HOWARD & CO. 17, New Bridge-street, Blackfriars.—For particulars, specifications, &c. apply to Mr. W. H. HAMMER, Estate Office, Silverdale, Sydenham, S.E.

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